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## CLINICAL OBSERVATIONS ON THE DIGITALIS-LIKE ACTION OF SQUILL *


PAUL D. WHITE, M.D.

GERARDO M. BALBONI, M.D.

AND

LOUIS E. VIKO

BOSTON


Squill has long been in use as a diuretic, an expectorant and a heart tonic. Is is classified now as a digitalis-like drug. As it has not hitherto been subjected to both of the two most satisfactory clinical tests of digitalis action, it has seemed of considerable interest to us to make a brief clinical study of the digitalis-like action of squill. The two tests which are pathognomonic of digitalis and its allies are (1) the production of heart block, particularly in auricular fibrillation, and (2) the change in the *T* deflection of the electrocardiogram.

The production of heart block by digitalis has long been recognized. It is best seen in patients with auricular fibrillation. Cases with normal rhythm may show delayed conduction and finally dropped beats after large doses of digitalis have been given; but cases with auricular fibrillation usually show the effect more quickly by a rapid drop in the heart rate from the high figure found before treatment.

The change in the shape of the *T* wave of the electrocardiogram resulting from digitalis is of relatively recent discovery. Cohn and Fraser,[1] in 1913, pointed out that digitalis may invert the *T* wave of the electrocardiogram. Since then this condition has been found to be quite the usual result of digitalization. The *T* wave, which is normally upright in Lead II, becomes at first lower, then flattened, and finally inverted with progressive digitalization. Patients with or without auricular fibrillation show the same tendency for the *T* wave change.

The drug squill is made up of the inner scales of the bulb of *Urginea maritima* or *Scilla maritima* (sea-onion). It is a plant that has been used for many centuries in the treatment of disease. It is said [2] that the ancient Egyptians employed it to induce vomiting. Hippocrates [3] used it both externally and internally. Pythagoras wrote a treatise about it, and Pliny described a method of preparing the vinegar of squill and the honey of squill for dropsies.

In works on pharmacology and therapeutics, squill is discussed under the heading of "digitalis and its allies," but its chief use in practice has been as an expectorant or as a diuretic. Haynes,[4] however, in 1906 claimed that it was a more efficient cardiac stimulant than digitalis or strophanthus. Dixon,[5] the same year, stated that squill has the disadvantages of uncertain absorption, strong gastro-intestinal irritation and vasoconstriction, particularly of the coronary vessels. Cushny,[6] in 1911, considered that clinically squill had only one-half to one-quarter the strength of digitalis. Hatcher,[7] in 1912, found that in cat units squill had little more than one-sixth the strength of digitalis.

TABLE 1.—ASSAY OF TINCTURES

| | |
|---|---|
| Tincture 1 | 0.006 |
| Tincture 2 | 0.0085 |
| Tincture 3 | 0.007 |
| Tincture 4 | 0.005 |
| Tincture 5 | 0.007 |

The various preparations of squill are the dried bulb (scilla) with a dosage, according to the U. S. Pharmacopeia of 0.1 gm. (1½ grains); vinegar of squill (acetum scillae), 1 c.c. (15 minims); fluidextract of squill, 0.1 c.c. (1½ minims); oxymel, from 2 to 4 c.c. (½ to 1 dram), B. P.; pill ipecac with squill, from 0.25 to 0.5 gm. (4 to 8 grains), B. P.; syrup of squill, 2 c.c. (30 minims); compound syrup of squill, 2 c.c. (30 minims), and tincture of squill, 1 c.c. (15 minims). In our investigation we have made use of the tincture, five different preparations: Nos. 1 and 2 at the House of the Good Samaritan, and Nos. 3, 4 and 5 at the Massachusetts General Hospital. They were all obtained from good pharmacists. One (Tincture 2) was received bottled originally as a physiologically assayed tincture; the others were made up from biologically assayed fluidextracts.

Dr. Worth Hale of the Department of Pharmacology of the Harvard Medical School has very kindly tested all five of these tinctures. The results of his assay are as given in Table 1, expressed in cubic centimeters of the drug (which is a 10 per cent. solution) per gram of frog necessary to produce in one hour systolic

* From the Massachusetts General Hospital and the House of the Good Samaritan.

* Read before the Section on Pharmacology and Therapeutics at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

* Owing to lack of space, this article has been abbreviated by the omission of the protocols. The complete article appears in the Transactions of the Section and in the authors' reprints. A copy of the latter may be obtained on application to the authors.

1. Cohn, A. E., and Fraser, F. R.: J. Pharmacol. & Exper. Therap. **5**: 512, 1913.
2. Buck, A. H.: The Growth of Medicine from the Earliest Times to about 1800, New Haven, 1917.
3. Stillé, Alfred: Therapeutics and Materia Medica, 1868. Pereira, J.: The Elements of Materia Medica and Therapeutics, 1854.
4. Haynes, G. S.: Biochem. J. **1**: 62, 1906.
5. Dixon, W. S.: Brit. M. J. **2**: 1459, 1906.
6. Cushny, A. R.: Am. J. M. Sc. **168**: 469, 1911.
7. Hatcher, cited in Sollmann, Torald: Manual of Pharmacology, 1917, p. 411.

standstill of the heart. Since the standard frog unit (U. S. P.) is 0.006, it is evident that all the preparations except Tincture 2 are standard or close to standard. Tincture 2 is twice the strength of the

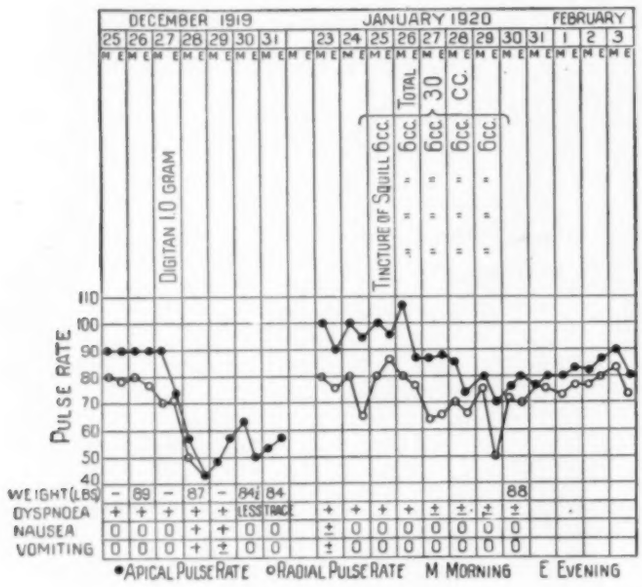


Fig. 1.—Effect of squill in Case 1.

standard. This is important because we thought at first that the feeble effect on the heart from ordinary doses of the tincture of squill in the cardiac cases tested might be due to weak, below standard preparations.

### EFFECT OF SQUILL ON FOURTEEN PATIENTS

The effect of squill on thirteen cardiac patients with auricular fibrillation and on one with auricular flutter has been studied by us. These cases and the results of squill and digitalis administration are fully described in the protocols.

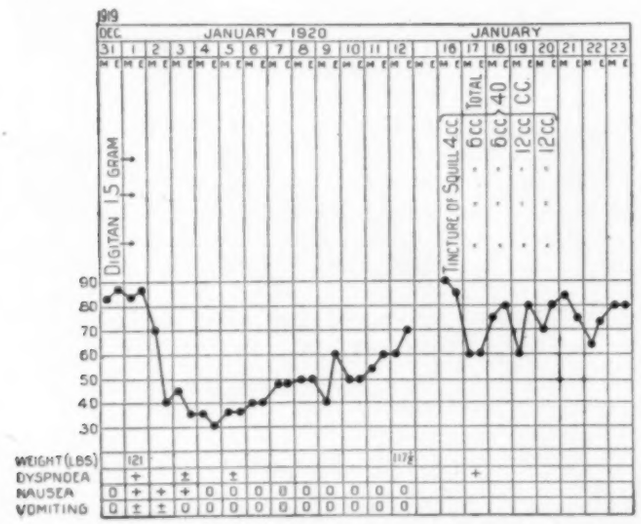


Fig. 2.—Effect of squill in Case 2.

1. *First Group.*—The first seven patients of the fourteen were at a hospital for chronic disease, the House of the Good Samaritan. One of the advantages in their study lay in the fact that most of them had been in the hospital for months and had shown already the effects of rest in bed and digitalis. They were thus in a stable equilibrium when tested. They all had auricular fibrillation, six due to rheumatic heart disease, five of whom had mitral stenosis and one aortic stenosis; the other patient had cardiorenal disease. Six had edema of the legs or of the liver, or of both.

(*a*) Effect of Digitalis: Before the squill was given, all of these seven patients first received massive doses of digitalis in the form of digitan (digipuratum), from 1 to 2 gm., within four hours. All reacted vigorously to this therapy with striking and rapid falls in apical pulse rate: 90 to 40 within twenty-four hours in Case 1; 86 to 40 within twenty-four hours in Case 2; 95 to 55 in Case 3; 110 to 80 in Case 4; 80 to 40 in Case 5; 90 to 44 within twelve hours in Case 6, and 130 to 55 within twenty-four hours in Case 7. There was nausea with vomiting in Cases 1, 2, 5 and 6 as the result of the digitalis; these patients were more or less prostrated for one or two days by the toxic effects, especially Case 5; this patient vomited for three days following the digitan, of which she received 2 gm., which

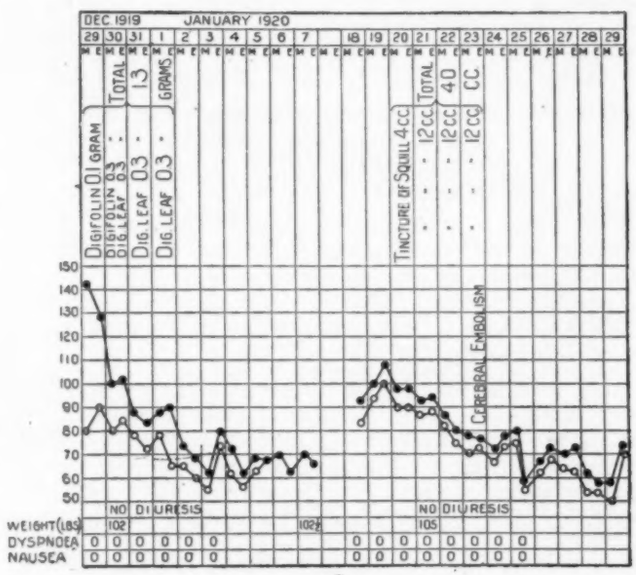


Fig. 3.—Effect of squill in Case 8.

was the largest massive dose given. There was definite symptomatic and objective circulatory improvement in all seven patients so soon as the toxic effects had disappeared. In some cases with edema, diuresis followed the drop in pulse rate. There was also increase in the vital capacity along with the subjective improvement.

(*b*) Effect of Squill: As it had thus been proved that these patients would all respond to digitalis favorably, an interval of about two weeks was allowed to elapse after the massive dose of digitalis in order to permit the complete excretion of this drug. Then tincture of squill in the dosage of from 2 to 4 c.c. (30 to 60 minims), which is from two to four times the average dose, was given three times daily for several days. Thus, in Case 1, 30 c.c. (7½ drams) was given in five days; Case 2, 40 c.c. in five days; Case 3, 48 c.c. in five days; Case 4, 48 c.c. in four days; Case 5, 48 c.c. in five days; Case 6, 52 c.c. in five days, and Case 7, 32 c.c. in five days. Tinctures 1 and 2 were given in about equal amounts to each patient except in Case 1, in which only Tincture 1 was given. Three of the

patients, 2, 3 and 6, showed no effects whatever except that possibly 3 and 6 had a little cumulative effect that aided the action of digitalis given again later. Patient 7 had slight nausea but no other symptom or sign of squill action. Patient 4 had very slight reduction in pulse rate (10 beats, 80 to 70) but otherwise no evidence of action. Patients 1 and 5 seemed slightly improved subjectively, and in them there was reduction of the pulse rate, 100 to 70 in Case 1 and 80 to 55 in Case 5. These results are noted in Table 2.

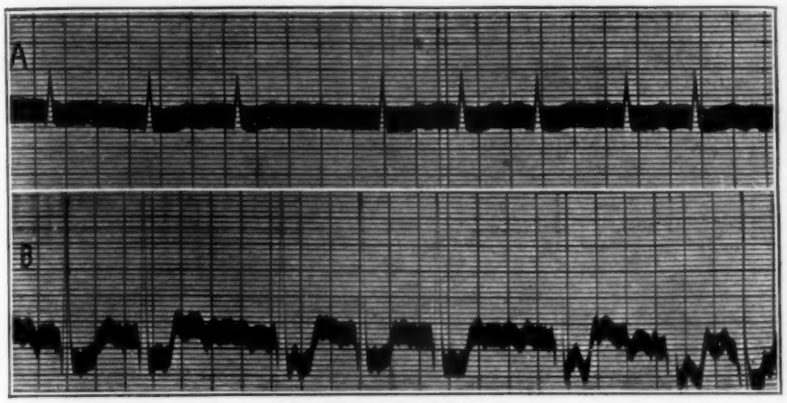


Fig. 4 (Case 9).—*A*, Lead II before administration of squill. Abscissa, 0.2 second. Ordinate, $10^{-4}$ volt. *B*, Lead II, showing effect of tincture of squill. Note inverted *T* wave and increased amplitude of *R*.

TABLE 2.—EFFECT OF SQUILL

| | | Tincture of Squill | | Effects of the Squill | | | | |
|---|---|---|---|---|---|---|---|---|
| Case | Reaction to Digitalis | Amount, C.c. | Days Taken | Heart Block | T Changes | Diuresis | Toxic Effects | Improvement |
| 1 | ++++ | 30 | 5 | Slight | .. | 0 | 0 | Slight |
| 2 | +++ | 40 | 5 | 0 | .. | 0 | 0 | 0 |
| 3 | +++ | 48 | 5 | 0 | .. | 0 | 0 | 0 |
| 4 | ++ | 48 | 4 | ? Slight | .. | 0 | 0 | 0 |
| 5 | ++++ | 48 | 5 | + | .. | 0 | 0 | Slight |
| 6 | ++++ | 52 | 5 | ?0 | .. | 0 | 0 | 0 |
| 7 | ++++ | 32 | 5 | ?0 | .. | 0 | Slight | 0 |
| 8 | ++++ | 40 | 3½ | ++ | ?0 | 0 | 0 | 0 |
| 9 | ..... | 136 | 12 | + | ++ | + | 0 | + |
| 10 | ..... | 184 | 15 | +++ | + | 0 | 0 | Slight |
| 11 | ..... | 112 | 4½ | + | + | 0 | + | Slight |
| 12 | ++++ | 192 | 4 | + | + | 0 | + | Slight |
| 13 | ..... | 176 | 3 | + | + | 0 | 0 | Slight |
| 14 | ++ | 184 | 4 | +++ | + | +++ | 0 | ++++ |

To summarize these seven cases, it may be said that patients with auricular fibrillation mostly of rheumatic origin who respond definitely to digitalis respond little if at all to two or four times the average pharmacopeial dose of tincture of squill continued for four or five days. In this group of cases, electrocardiograms were not taken.

2. *Second Group.*—The second group of seven cases was studied at the Massachusetts General Hospital. Six of these patients had auricular fibrillation, three of the rheumatic type, two with mitral stenosis; one of the other three had cardiosclerosis, and the other two cases were of unknown cause, probably rheumatic. The seventh patient had auricular flutter with cardiosclerosis. At the Massachusetts General Hospital there was one disadvantage, that of not having observed the cases for some months previously in the same environment. On the other hand, there were two advantages: Electrocardiograms were taken daily or every other day just before, during and after the administration of the course of the squill, and most of these cases were studied later than the Good Samaritan group, and so received larger doses of the squill. The dose varied in these patients from 4 c.c. (1 dram) to 16 c.c. (½ ounce)—from four to sixteen times the pharmacopeial dose—and was given three times daily. In Case 8, 40 c.c. were given in three and a half days; Case 9, 136 c.c. in twelve days; Case 10, 184 c.c. in fifteen days; Case 11, 112 c.c. in four and a half days; Case 12, 192 c.c. in four days; Case 13, 176 c.c. in three days, and Case 14, 184 c.c. in four days. The absence of effect in the cases at the House of the Good Samaritan caused us to start with the dose of 4 c.c. As this was ineffective, it was doubled for later cases and finally quadrupled for the last three cases. It was only when we were giving 16 c.c. (4 drams) at a dose instead of 1 c.c. (15 minims) that we obtained finally very definite digitalis-like action from tincture of squill.

(*a*) Effect of Digitalis: Three of these seven patients were given digitalis also, Patient 8 receiving 1.3 gm. of digifolin and digitalis leaf in three and a half days; Patient 12 was given a massive dose of 1 gm. of digitan at entrance, and Patient 14 was given digitan and tincture of digitalis, equivalent to 2 gm. of the leaf, in the course of four days. An interval of two weeks or more separates the digitalis from the squill administrations, in the first two cases the digitalis preceding the squill and in the last vice versa. Patients 8 and 12 reacted remarkably to the digitalis, Patient 14 definitely but not so markedly. Digitalis, in large amounts at least, was not given to the other four patients.

(*b*) Effect of Squill: In these seven cases at the Massachusetts General Hospital the squill showed a definite digitalis-like action in every case (Table 2). In Case 8 there was slight effect, the pulse rate dropping but the *T* wave of the electrocardiogram showing little if any change; this patient received, however, only 40 c.c. of the drug, which was discontinued because of cerebral embolism. Case 9 showed more squill effect, not only in the reduction of the pulse rate, but also in the inversion of the *T* wave, diuresis and subjective

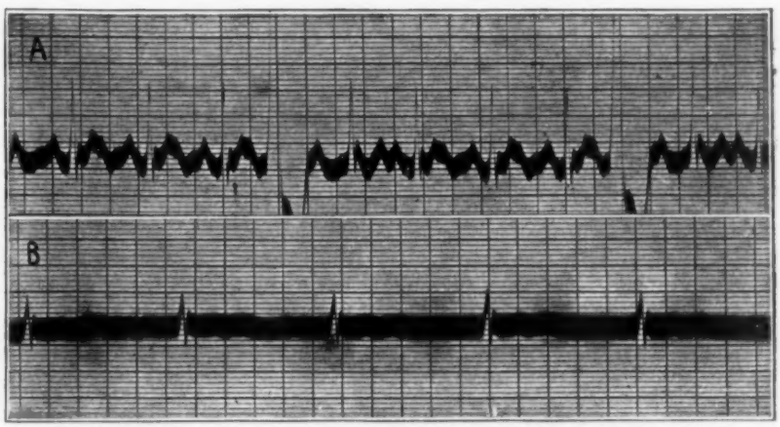


Fig. 5 (Case 10).—*A*, Lead II, before administration of squill. Auricular flutter. *B*, Lead II, showing effect of squill: flattened *T* wave, disappearance of flutter, decreased amplitude of *R*.

improvement. The drug was stopped on the occurrence of an embolism in the foot. Case 10, with auricular flutter, showed apparently definite squill effect also—in the breaking up of the auricular flutter, slight subjective improvement, and a flattening of the *T* wave of the electrocardiogram. Case 11 showed

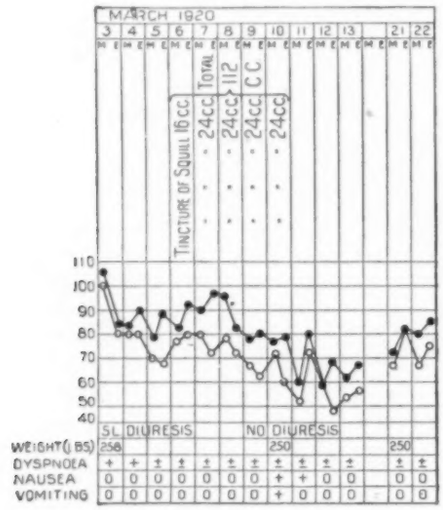


Fig. 6.—Effect of squill in Case 11.

squill effect in subjective improvement, reduction of the apex pulse rate, flattening of the *T* wave, and nausea and vomiting. Case 12 showed a pronounced effect from the squill, especially in the electrocardiogram, a bigeminy due to ectopic ventricular complexes occurring, with the *T* wave much decreased in height (Fig. 7). In Case 13 there was slight subjective improvement, some reduction of the apex rate and inversion of the *T* wave. Case 14 showed the most striking effect of all. This patient, who entered the hospital almost moribund, improved rapidly and markedly under the squill, with great reduction of apical pulse rate, marked diuresis following the pulse drop and the improvement in the heart and circulation, and inversion of the *T* wave of the electrocardiogram (Figs. 9 and 10).

## RESULTS

1. *Production of Heart Block.*—Turnbull [8] produced marked sinus arrhythmia, premature beats, and a slight degree of heart block after exercise in a patient with mitral stenosis without auricular fibrillation by giving 11 drams (44 c.c.) of the tincture of squill in eleven days. Altogether, 20 drams (80 c.c.) were given to this patient in twenty days, with finally loss of appetite and general malaise. In another paper [9] he stated that tincture of squill in 15 minim doses four times a day produced no symptoms in most cases, even in amounts up to 21 drams (84 c.c.) in twenty-one days; the exception he cites is the case already described in his other paper. He stated that this dose of 15 minims (1 c.c.) four times daily "proved sufficient in several cases to maintain the slowing and good effects produced by digitalis. The squill used was one and a half times as strong pharmacologically as the digitalis." In the discussion of this paper, E. I. Spriggs considered digitalis more effective in slowing the heart and arresting its irregularities than strophanthus or squill. Whiting,[10] in 1918, reported an interesting case of mitral stenosis which he treated before and after the onset of auricular fibrillation. He found that tincture of digitalis gave wonderful improvement during fibrillation, while in the prefibrillation days it had had only a trivial effect, if any, on the heart, with some improvement in the general condition of the patient. Tincture of squill was tried in this case and appeared to be equivalent to a weak digitalis. From 1½ to 2 drams (6 to 8 c.c.) was given daily for five days (30 to 40 c.c.) to five weeks (210 to 280 c.c.); the pulse remained at about 72; there was no definite diuresis; slight headache was the only toxic symptom.

In our fourteen cases especially selected because of their ready response as auricular fibrillation or auricular flutter to digitalis, there was strikingly little production of heart block except with large doses. With a dose from eight to sixteen times the average U. S. P. dose, there was definite digitalis effect, a pronounced blocking, especially marked and typical in Case 14 (Fig. 9).

2. *Electrocardiographic Changes.*—So far as we know, no observations of the effect of squill on the electrocardiogram have hitherto been made. Of the seven cases of our second group from which electrocardiograms were obtained, six showed definite changes in the *T* wave, a decrease, flattening or inversion. This is a typical digitalis effect. In only one case, Case 8, was there no apparent change, and here only 40 c.c. of the tincture of squill was given. In two cases the *Q-R-S* complexes changed considerably during the squill administration: in Case 9, in which they increased greatly in amplitude with improvement in the patient's condition (Fig. 4), and in Case 10, in which the reverse occurred (Fig. 5).

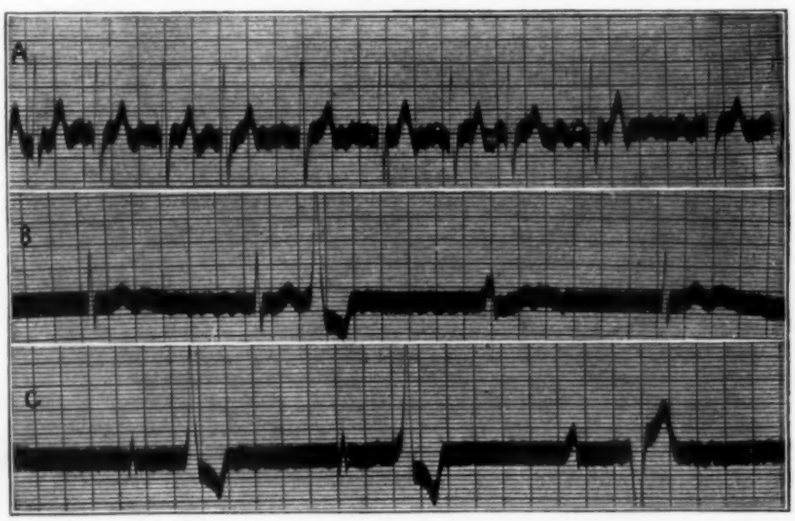


Fig. 7 (Case 12).—*A*, Lead II, before administration of squill. Note high *T* wave. *B*, Lead II, showing squill effect: bradycardia, flattened *T* wave and ectopic complex. *C*, Lead III, showing coupling, bigeminy, the result of squill.

8. Turnbull, H. H.: Heart **2**: 15, 1910-1911.
9. Turnbull, H. H.: Proc. Roy. Soc. Med. **4**: 25, 1910-1911.
10. Whiting, A. J.: Proc. Roy. Soc. Med., Sect. Therap. **11**: 1, 1918.

3. *Diuresis.*—Wood,[11] in 1856, considered that squill ranked among the most energetic diuretics, being inferior only to digitalis and potassium bitartrate in efficiency. Now, of course, digitalis is recognized as a diuretic only secondarily; that is, through the improvement of the heart and circulation by digitalis, diuresis will follow in edematous cases. In our group of fourteen cases there was diuresis from squill in only two, both of which were edematous before the administration of squill. In both cases the diuresis followed the reduction in pulse rate. Hence squill should probably be regarded as a diuretic in heart disease only secondarily, like digitalis, through its improvement of the heart and circulation.

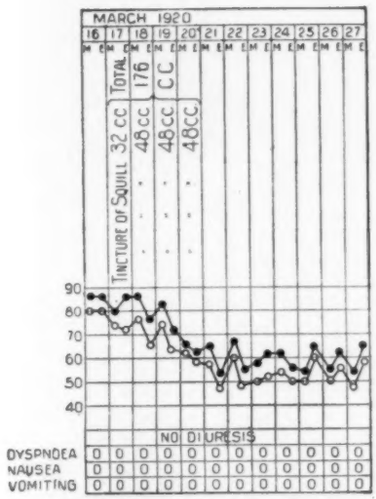


Fig. 8.—Effect of squill in Case 13.

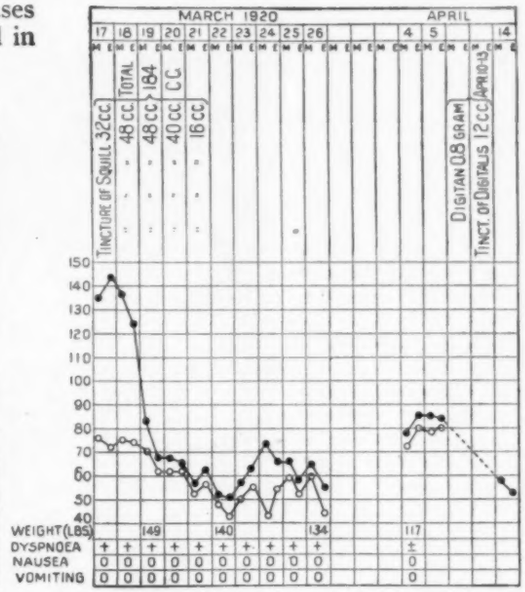


Fig. 9.—Effect of squill in Case 14.

4. *Toxic Effects.*—Toxic effects occurred in only three of the fourteen cases, nausea in one, nausea and vomiting in another, and a bigeminal pulse in a third. In the third case there was no nausea. There was no diarrhea in any case. Expectorant action was not observed in any case, except as associated with the nausea in the two cases cited above.

SUMMARY

1. The digitalis-like action of squill has been studied in fourteen patients with heart disease, complicated by auricular fibrillation in thirteen cases and by auricular flutter in one case.

2. The two definite clinical signs of digitalis action are the production of heart block and the lowering of the *T* wave of the electrocardiogram.

3. Heart block was produced in this series by the standardized tincture of squill only in large dosage.

4. The *T* wave of the electrocardiogram was flattened or inverted by large doses of the squill, similarly as by digitalis.

5. No diuresis occurred even with very large doses of the standardized tincture of squill, except in two cases of edema after the pulse rate had been reduced and the circulation improved.

6. Toxic symptoms were very rare, even with the largest doses.

7. With the reduction in pulse rate (and diuresis) there was subjective improvement in some of the cases.

8. Finally, the conclusion is justified that squill does have a definite digitalis-like action, but only in larger dose than that now stated as an average, e. g., from 2 to 4 drams (8 to 16 c.c.) instead of 15 minims (1 c.c.) of the tincture at each dose.

11. Wood, G. B.: A Treatise on Therapeutics and Pharmacology, 1856.

## ABSTRACT OF DISCUSSION

DR. J. T. HALSEY, New Orleans: There are several important points about squill which we want to know. Is it as effective as digitalis in producing the all important "block" effect and also the effects on the functions of the heart muscle which are probably also of much importance? Is the generally accepted view that squill is more diuretic than digitalis correct? Is squill more emetic and nauseant than digitalis? I would ask Dr. White to state whether his observations have permitted him to reach any conclusions on these matters.

DR. CARY EGGLESTON, New York: Dr. White's paper has been very interesting to me from one particular point of view, that is, the question of the absorption of squill. He quoted Dr. Hatcher in saying that squill was only one sixth as active as digitalis. I do not remember that statement by Dr. Hatcher, but we now know that a first class preparation of squill when compared with a first class preparation of digitalis is sometimes of equal activity, at least by the cat method. Consequently Dr. White's observation does not mean that squill is relatively inactive on the heart so much as that squill is poorly absorbed from the gastro-intestinal tract. I think the fact that such large doses of squill, as compared with digitalis, were required may be due to its poor absorbability. We have made observations of the absorption of squill from the intestinal tract in the cat and we found that it is very poorly absorbed. We think it is safe to conclude from the observations in the cat that absorption may be poor in man, for the reason that we found throughout the range of digitalis bodies that where the absorption was poor in the cat, it subsequently proved to be poor in man. To my mind the most significant contributions that Dr. White made are: The final proof that squill is a cardiac drug, capable of producing the same effect in man as digitalis; and the fact that squill is not a substitute for digitalis for oral administration because it is so poorly

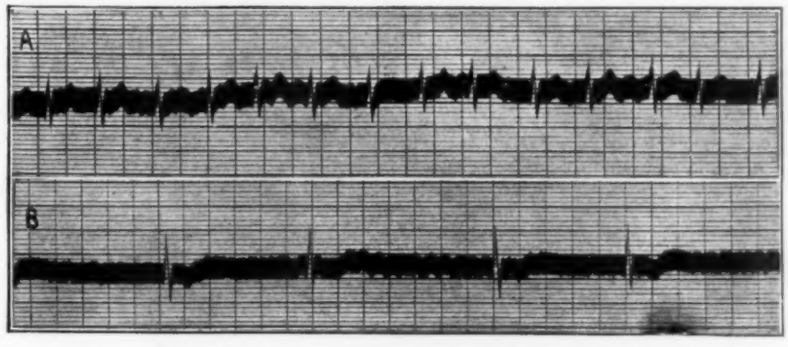


Fig. 10 (Case 14).—*A*, Lead II, before administration of squill. *B*, Lead II, showing squill effects: heart block and inverted *T* wave.

absorbed. I believe that is the reason why squill has been so successful as a nauseant, and the cardiac action of squill has been overlooked I certainly think we have no reason for using squill in the treatment of cardiac disease and believe Dr. White agrees with that suggestion. Whether there is justification for its use in other diseases will remain to be seen, and I think is a matter of considerable doubt.

Dr. G. M. Balboni, Boston: As far as the diuretic effect of squill is concerned, in small doses there has been none. Only when we gave 16 c.c., three times a day, have we obtained diuresis as a secondary effect in patients with edema. As far as the expectorant action goes, we do not believe that it is such a good expectorant as we are told in books, but with the onset of nausea, there is an expectorant effect, probably chiefly salivation. As far as toxicity is concerned, we did not find that it had a severe toxic effect. This may be due to its inability to be absorbed by the gastro-intestinal tract. I was very much interested in looking over one of the recent books on pharmacology and therapeutics (Wilcox, p. 147) to find that he says squill produces a much more violent gastro-intestinal irritation than digitalis, causing in large doses crampy pains, vomiting and even marked enteritis. This has not been our experience. The effect of the alcohol in the large doses of tincture of squill was very transient, very slight and would tend to raise pulse rate rather than the reverse.

## INFECTIOUS ECZEMATOID DERMATITIS*

RICHARD L. SUTTON, M.D.
KANSAS CITY, MO.

It has recently been stated that the term "infectious eczematoid dermatitis" is lacking in grace and euphony, as well as in accuracy, but at this time I know of no appellation that will adequately take its place. While it is true that our conception of the affection as it was first described has undergone some changes, these changes tend to increase rather than diminish the clinical importance of the disorder. Scarcely a fort-

Fig. 1.—Infectious eczematoid dermatitis of hand; lesions resemble those due to tinea; attack followed furunculosis.

night passes that I do not receive a letter from some medical man located in one of the smaller cities asking for information and advice regarding "a peculiar disease" which developed secondary to scabies, furunculosis or other common suppurative condition, and then, almost invariably, there follows a more or less typical description of infectious eczematoid dermatitis.

As originally described by Engman, in 1902, "staphylogenetic (?) eczematoid dermatitis" is thus characterized:

1. The initial or earliest lesion may be a vesicle, pustule or erythematous, scaly or crusted point or plaque.

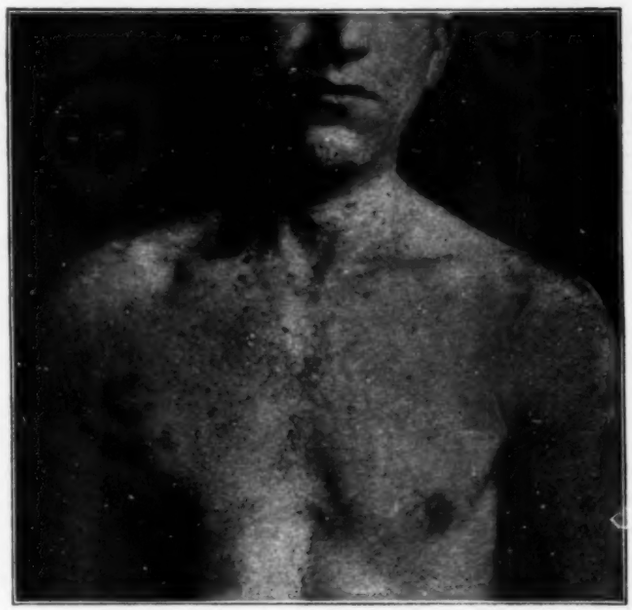

Fig. 2.—Infectious eczematoid dermatitis following scabies: The disease involved the entire body as well as the neck and face.

2. The vesicles are not so closely placed and are larger than those seen in an acute symmetrical vesicular eczema.

3. There is no symmetry in the arrangement of the lesions, except when thus accidentally inoculated.

4. It occurs in patches, usually not involving a large area of surface in a single patch. When the disease begins as vesicles, they soon break to form a scaly patch which extends in the usual manner. New foci may begin as a cluster of vesicles.

5. The patches are circumscribed with sharply defined borders. The epidermis at the periphery is usually undermined, split up, detached or raised, the two latter events being caused by perceptible or imperceptible serous or seropurulent fluid, which may, if it contains much fibrinous material, instantly form a thin ridgelike crust about the periphery; while if in larger amounts and more fluid, drops of it can be pressed out from under the raised epidermis.

6. The disease increases by peripheral extension of the patches and the formation of new ones by autoinoculation.

7. The exposed parts are the most frequently affected.

8. There is no attempt at central involution.

9. There is a minimum amount of itching.

10. The nearest lymphatic glands are often enlarged.

11. The initial and earliest vesicle, pustule, scaly or crusted spot contains the yellow or white staphylococcus in pure culture, as well as the surface and crusts of the later patches.

12. Experimental autoinoculation can usually be successfully performed, but the lesion thus produced begins as an erythematous patch which soon weeps and crusts, and not as vesicles.

13. The history of trauma, infection or association with suppurative conditions is characteristic of the affection.

14. Local antiparasitic applications are sufficient to effect a cure.

In 1910, Fordyce[1] read a valuable and thought-provoking paper on the subject, emphasizing the

* Read before the Section on Dermatology and Syphilology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

1. Fordyce: J. Cutan. Dis., 1911, p. 129.

important part played by antecedent lesions and diseases of the skin, such as scabies, wounds or traumatisms which had become infected, furuncles, intertrigos, sinuses left after operation on bone, etc., in the causation of certain types of dermatitis. In this communication he first called attention to "the more complex types of cutaneous eruption caused by pus organisms or their toxins," and to our hesitancy "to extend the rôle of these organisms, at least as causative agents, to such affections as the intertrigos and eczemas." At the time Fordyce's paper was presented, our knowledge of anaphylaxis and its relationship to cutaneous eruptions was in its infancy, and focal infection was a total stranger. During the ten years that have elapsed since then, we have learned much, but even now we are not entirely certain that our conclusions are always based on scientific fact. A careful survey of the clinical and experimental evidence at our disposal would indicate, however, that

Fig. 3.—Infectious eczematoid dermatitis of the body and face, showing urticarial character of lesions.

the phenomenon of protein sensitization plays an extremely important part in the etiology of a number of well recognized cutaneous maladies. The most typical and characteristic of these is, of course, urticaria, with erythema multiforme a fairly close second.

Von Pirquet [2] and Major and Noble [3] believe that anaphylaxis is a prominent factor in the causation of the skin eruptions of the various exanthems, von Pirquet being of the opinion that the prodromal stage corresponds roughly in time with the development of the anaphylactic reaction, and that the eruptive stage is produced by a combination of the antibody with the virus of the disease, probably in the blood stream. He emphasizes the fact that the eruption commonly first appears, and later becomes more intense, in the richly vascular localities. I have twice seen the eruption of smallpox develop on small, circumscribed hyperemic areas (once beneath a mustard plaster, and once on an area that had been painted with iodin) seventy-two hours before other, nonirritated, parts of the body were affected.

While infectious eczematoid dermatitis is in no sense of the term a purely anaphylactic manifestation, in many instances there is a concurrent eruptive phenomenon which can be ascribed to no source other

Fig. 4.—Infectious eczematoid dermatitis of hand following furunculosis.

than that of allergy. The association of the two conditions is too frequent to be due to accident alone. In a series of seventy-four case histories, selected at random and scattered over a period of two years, I found a record of concurrent urticarial eruptions in nineteen instances (more than 25 per cent.). The antecedent disorders varied greatly, but were fairly characterisitic: lacerated, infected wound of the hand; furuncle of the right thigh; scabies; infected ingrowing toe-nail; ecthyma; infected wound of the right forefinger; otitis media; infected, incised wound of the right hand; infectious discharge from the nose; infected wound of the right shin; furuncle of the left axilla; paronychia; infected wound of the thumb, and furuncle of the scalp. As a rule the anaphylactic

Fig. 5.—Infectious eczematoid dermatitis of finger: Lesions resembled those of trichophytosis, but no fungi were found in the culture, and recovery was prompt under the use of simple astringent lotions.

manifestations did not appear until after the staphylococcic disorder was well under way. A considerable percentage of these patients had never before suffered from urticaria. In a few instances, the wheals were accompanied by vesiculation, with subsequent infection and pustulation. As a rule, the pustules did not heal promptly.

2. Von Pirquet: München. med. Wchnschr. **63**: 1457, 1906.
3. Major and Noble: Ztschr. f. exper. Med. **2**: 9, 1913.

The urticarial eruption was most pronounced on the trunk, but the limbs also, and, occasionally, the face and ears, were involved. Not infrequently the urticaria-like eruption would disappear promptly following treatment, only to break out anew, and apparently with redoubled vigor, a few days later. All of the attacks were nonfebrile. As a rule, the earlier lesions were frankly suppurative (of fourteen cases in which cultures were made, *Staphylococcus aureus* was recovered in eleven), and autoinoculable. In the later, more generalized eruptions, however, attempted cultivation frequently proved unsuccessful.

In the postscabetic cases, the dermatitis, which commonly started in the axillary or the genital regions, might at first resemble a rash due to drug irritation (sulphur), but the manner in which new lesions quickly developed on the face and other distant parts of the body precluded a probable diagnosis of dermatitis medicamentosa.

The eruption was usually roughly symmetrical and involved areas which had never received local treatment of any kind. The urticarial manifestations may persist for several weeks after the early, suppurative lesions have healed.

The problem of successful treatment is often a vexatious one. In the earlier stages of the disease, I have found that a mild astringent, such as an aqueous solution of aluminum acetate (0.5 per cent.), or even lead and opium lotion (lotio opii et plumbi subacetatis) is more effective than one of the greasy preparations. At the end of forty-eight or seventy-two hours, however, one may profitably begin the use of a weak ammoniated mercury ointment (2 per cent.), together with a bland dusting powder containing a small amount of boric acid. After the tendency to suppuration has been overcome, phenolated zinc oil may be substituted for the mercurial ointment.

Fig. 6.—Infectious eczematoid dermatitis of trunk, face and forehead: Disease developed following furunculosis of axillae.

For the relief of the pruritus which often accompanies the urticarial lesions, calamine lotion, to which liquor carbonis detergens (from 2 to 10 per cent.) has been added, affords much relief. If necessary, a small amount of phenol (1 per cent.) or menthol (0.5 per cent.) may be added to the ammoniated mercurial preparation, and the ointment used in conjunction with the lotion.

Fig. 7.—Infectious eczematoid dermatitis involving face, forehead and scalp: Attack followed infection of hand.

In many instances, unfortunately, local treatment alone fails to bring about a cure, at any rate within a reasonable length of time. Internally, alkaline preparations, such as sodium acetate and sodium citrate (as recommended by Skillern [4] in combating furunculosis), in large doses, combined, if the patient is nervous and irritable, with sodium bromid, frequently prove helpful. If these, too, fail, I have found the most serviceable remedy to be a mixed staphylococcus vaccine. It is possible, as Davis [5] has suggested, that preparations of this type serve as nonspecific proteins rather than as specific vaccines, but I always endeavor to give the remedy the benefit of the doubt; and as the ensuing results have been satisfactory in my experience, I recommend it here. The initial dose should be small (from 25,000,000 to 75,000,000), and I usually repeat the injections every third day, gradually increasing the amount each time.

No one realizes better than I that our present knowledge of anaphylaxis, and particularly of anaphylaxis as related to the etiology of cutaneous disorders, is far from complete. Nevertheless, I believe we may safely assert that this phenomenon plays an important part in the prolongation, if not in the actual causation, of many cases of infectious eczematoid dermatitis.

4. Skillern: Pennsylvania M. J. **16**: 790, 1913.
5. Davis, D. J.: Vaccine Therapy, J. A. M. A. **68**: 159 (Jan 20) 1917.

## ABSTRACT OF DISCUSSION

DR. FRANCIS E. SENEAR, Chicago: I am entirely in accord with Dr. Sutton. We have been inclined to consider this as rather an unusual or rare disorder, but if we will look for it we will see it more frequently. In one case, after all treatment, including roentgen rays, had failed, the vaccine suggested by Dr. Sutton brought about complete cure. The patient has been without treatment for about three months and there has been no recurrence.

DR. AUGUSTUS RAVOGLI, Cincinnati: Is this a dermatitis or eczema? Eczema is dermatitis, but dermatitis is not eczema. Dr. Sutton says there are pustules, but there is a pustular eczema. I would not like to say "eczematoid dermatitis" but rather pyodermatitis if infected with staphylococci and erysipelas if infected with streptococcus not only locally, but the whole system, as shown by the fever and the general sickness.

DR. EVERETT S. LAIN, Oklahoma City: After seeing a case from Dr. Sutton's clinic in which a diagnosis of infectious dermatitis had been made and which later developed into a clear case of circinate lichen planus, I was disposed to question his diagnosis of this class of cases. However, after hearing his description of this eruption, I am inclined to believe that it should be separated from the ordinary dermatitis which frequently follows drugs or irritants. I have seen a number of such cases associated with scabies and have usually termed them sulphur or balsam dermatitis.

DR. ERNEST L. MCEWEN, Chicago: This nomenclature is confusing. The case is infectious, eczematoid and a dermatitis. It is difficult to differentiate between an eczema and a dermatitis. I do not know exactly what is meant by the term "eczematoid dermatitis." It is designated as "infectious"; we speak also of a "parasitic dermatitis," but the two are not necessarily identical. This multiplicity of terms of closely related meanings is most confusing, especially for students.

DR. HAROLD N. COLE, Cleveland: Eczematoid dermatitis is an unfortunate term. I would suggest "impetiginous dermatitis," a term used by Professor Jadassohn. If we make cultures we will find not only the staphylococcus but the streptococcus in many instances. Making cultures on four or five successive tubes of agar, the last one will be almost a pure culture of streptococcus. I have found the use of a 1 per cent. potassium permanganate aqueous solution "soak" every day very successful. If these "soaks" are used for four or five

Fig. 8.—Infectious eczematoid dermatitis of forearms, which developed following an infected wound of the finger.

days, the eruption will be eradicated almost entirely. If we stop at that point the eruption returns, but if this treatment is followed with radiotherapy the eruption does not return.

DR. WILLIAM A. QUINN, Chicago: I hope some day some one will write a book on dermatology in which there will be no such word as eczema. If a man cannot find some cause for a disease he should at least not classify it as eczema for that only adds to the confusion.

DR. J. N. ROUSSEL, New Orleans: I see from twenty to twenty-five cases of this disease in my office every week. I have never seen salicylic acid fail to cure, if it is used properly. No matter how severe the symptoms, I clean off the area with gasoline and apply a saturated solution of salicylic acid. I seldom have to use it twice. I follow this treatment with ammoniated mercury. The permanganate packs are good but they are hard to use. We more often find the streptococcus as the cause than any other organism.

DR. WILLIAM H. MOOK, St. Louis: When Dr. Engman attempted to separate this group, he took a group of pyodermics which had been given various names and termed them "eczematoid dermatitis." The etiologic factor in eczematoid dermatitis is the staphylococcus, and it attacks the follicle primarily. These follicular lesions coalesce and produce a patch. The streptococcus attacks the superficial layer of the skin, not the follicles; the crust is not follicular. "Infectious"

Fig. 9.—Infectious eczematoid dermatitis of hand: Lesions bore some resemblance to those of dermatitis repens, but were very superficial, and in this instance responded promptly to simple astringent lotions.

describes the disease. It is really an infectious condition of the skin. The term eczema gives the clinical description.

DR. M. J. FARBER, St. Joseph, Mo.: In my opinion this phenomenon of dermatitis follows scabies and is not due to the scabies, but to the treatment of scabies. Every general practitioner treats scabies with a different preparation and does not give the patient proper instruction how to use it. The eruption from the treatment of scabies which is produced in that way is a dermatitis medicamentosa.

DR. RICHARD L. SUTTON, Kansas City, Mo.: I am sorry that the name "infectious eczematoid dermatitis" does not meet with approval, but I disclaim all responsibility although I think the appellation a good one. We have not succeeded in securing a culture from the urticarial lesions, but this is not surprising when we consider their probable nature. The disease is undoubtedly common and the fact that it is seldom recognized would indicate that it has not received the attention it deserves.

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**The Mother's Own Health.**—The period between school and marriage is a critical one for the future mother. She has often to engage in work under conditions which do not make for full physical development. Long hours, a sedentary life, unduly heavy work, insufficient or unsuitable food, lack of fresh air, any or all of these may lead to an unsatisfactory state of health and result in an anemic, undernourished body which is no good preparation for future motherhood. In any event the burden of maternity is a heavy one. We owe a duty to the mother, and particularly to the working class mother, to do all in our power to lighten it and to relieve it of avoidable hardship, disability and danger. To put the matter at its lowest, it is not to the advantage of the nation that so large a number of its women should be prematurely worn out or disabled because of the heavy strain of bearing and rearing a family, together with the illness, sickness and injury so often involved, at a time when they should still be full of health and vigor. The least we should do is to ensure that the mother is properly nourished before and after childbirth, that she is spared domestic or industrial work likely to cause undue fatigue or other injury, that skilled advice is available, when needed, and that the treatment she receives is careful and competent.—*J. State Med.*, July, 1920.

# SOME OBSERVATIONS ON CHRONIC NEPHRITIS

## WITH SPECIAL REFERENCE TO CHRONIC INTERSTITIAL NEPHRITIS *

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NORMAN, OKLA.

Every student of pathology is familiar with the histologic picture of that condition of the kidneys known as chronic interstitial nephritis: the enormous mass of connective tissue in comparison with the normal, and the absence of the tubules and the glomeruli. Earlier students of this condition were struck with this picture; apparently it seemed to them that the most striking thing about it was the increase in the connective tissue, and it appeared to represent the end-result of the hypertrophy of the stroma which was responsible for the absence of the parenchyma; hence the name, chronic interstitial nephritis. Futhermore, this term implies that there is a condition that would be called acute interstitial nephritis, in other words, a condition in which this hypertrophy of the stroma is an active process, choking to death, as it were, the tubules involved in the areas of stroma hyperplasia. A careful study of the chronic condition, however, shows that the most striking thing in the picture is not the increase in stroma, but the absence of functionable parenchyma, and that there is very little real increase in the stroma, the apparent increase being more relative than actual. In the first place, the kidney is

Fig. 1.—Drawing of area of senile nephritis in normal kidney.

reduced in size, which would tend apparently to increase the stroma, since the parenchymal decrease is responsible for the reduced size. In the second place, not an inconsiderable part of the mass of tissue that at first sight appears to be connective tissue consists of epithelial cords representing former tubules, for no tubule or glomerulus that ever existed entirely disappears unless there has been a necrotic process, which is not the case in this form of diseased kidney. Further, there has not been discovered any acute or early condition that could be considered the forerunner of the chronic condition. In making the latter statement, I am aware of the fact that nephritis, by the time it has reached a stage that is recognized clinically, has gone on until the kidney is dangerously near its physiologic minimum, or in other words, it is already in a chronic condition; but an examination of the kidneys in cases of death from other causes would, in some cases, reveal this early condition if such a condition existed, and no such early interstitial hyperplasia and choking of the parenchyma has been found.

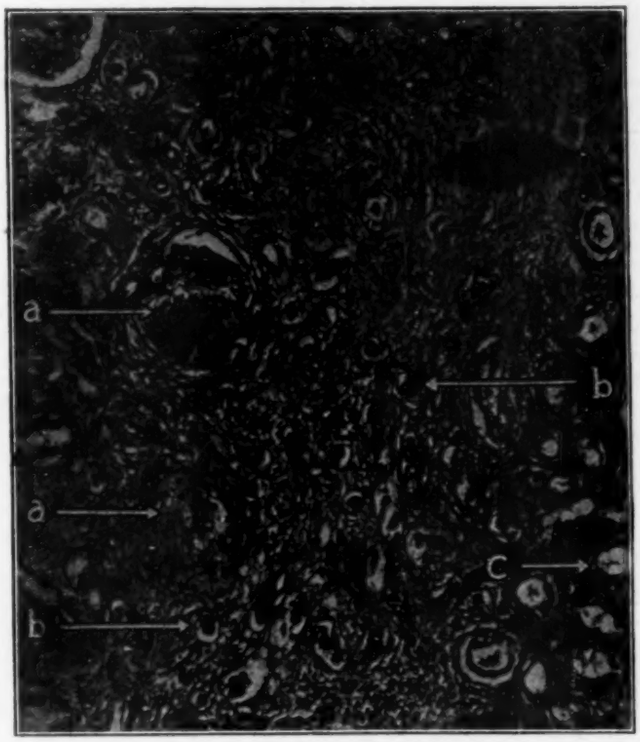


Fig. 2.—Fibrosed area in chronic senile nephritis: *a*, *a*, fibrosed glomeruli; *b*, *b*, epithelial cords of former tubules; *c*, partially atrophied tubules. Concentric atrophy; × 150.

Connective tissue does not hypertrophy spontaneously except in tumor formation, and there is no question of that in the condition under discussion. The conditions leading to the hypertrophy of the connective tissues, so far as they are known, are: (1) trauma; (2) chronic hyperemia; (3) destruction of tissue, as by bacteria or other infective agents; (4) retrogressive processes of tissues of which connective tissue forms the stroma, and (5) perhaps the action of some as yet unknown chemical substance. In the condition under discussion, only three of these could be considered: the passive congestion, the retrogressive processes and the chemical irritant. In case the first and the last of these were operating, the connective tissue hypertrophy would precede the parenchymal reduction, and a careful study of the condition shows that this is not the case; further, it can be shown and will be brought out later that in cases of so-called chronic interstitial nephritis, there is no inconsiderable amount of nonfunctioning parenchyma

* Read before the Section on Pathology and Physiology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

in areas that are not the site of connective tissue hypertrophy, but that the connective tissue hypertrophy depends on the character of the parenchymal retrogression. Therefore we must conclude that the parenchymal retrogression precedes the stroma hypertrophy so that we are not dealing with an interstitial condition at all. Also, the question arises as to the early processes that precede the condition now called chronic interstitial nephritis.

An examination of one of these chronic kidneys reveals the following conditions: Grossly, there is a reduction in the size of the organ, and the surface has a granular appearance. This granular appearance is due to alternate elevations and depressions. A microscopic examination of a section of one of these kidneys discloses that the areas of elevation seen on the outside are occupied by hypertrophied tubules and glomeruli, some of which are fairly normal so far as the character of the epithelium is concerned, and were the tubules that were functioning at the time of death. The other tubules of this region are, some of them, enlarged, and others more normal in diameter; but both have an atrophied or degenerated epithelium, and the lumen is usually filled with amorphous homogeneous material that stains pink or reddish with eosin. The depressed areas seen on the outside are occupied by fibrosed glomeruli, and the tubules are atrophied to mere epithelial cords, and the increased connective tissue that has given the name to the condition. A careful consideration of this picture reveals the fact that there are two classes of non-

Fig. 3.—Chronic senile nephritis: hyperplastic tubules, not functioning at time of death. Dark masses within tubules are casts that have shrunk from the walls during fixing. Note the atrophied epithelium and small amount of intertubular connective tissue; × 150.

functioning tubules, both of which have atropied epithelium. In one case the actual diameter of the tubule may be increased, and in the case of the other the lumen, if there can be said to be a lumen, is almost ultramicroscopic in size. In the case of the latter these cords are separated by considerable connective tissue, while in the case of the former there is little if any increase in the stroma. But the important point is that, so far as the function of the organ is concerned, so far as the pathologic condition of the epithelium is

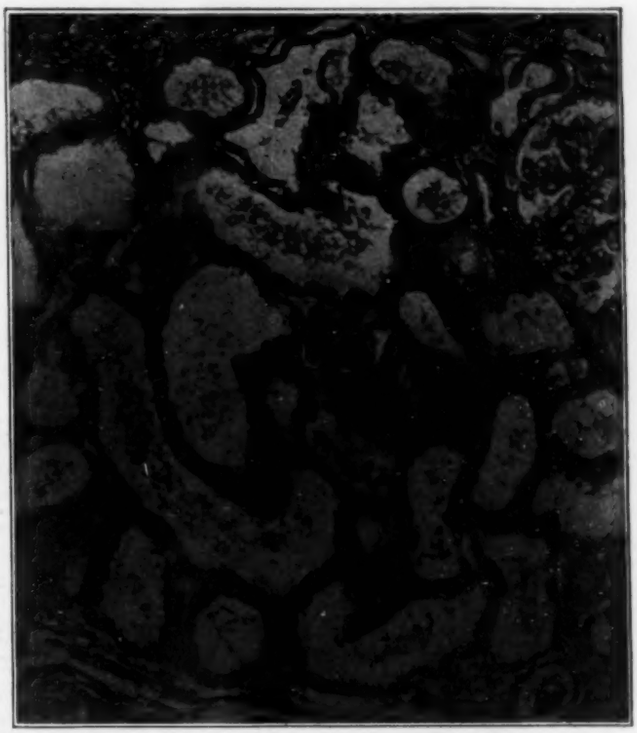

Fig. 4.—Chronic senile nephritis: hyperplastic tubules functioning at the time of death; × 150.

concerned, and therefore so far as the real pathologic condition is concerned, the two areas are the site of the same processes, the difference being that in the case in which there is a reduction of the size of the tubules there is an increase in the connective tissue between the tubules, but where there is no reduction in the size of the tubule there is no increase in the connective tissue—a fact which, in itself, would lead us to conclude that the steps in the formation of the condition known as chronic interstitial nephritis are a reduction in the amount of parenchyma, followed here, as in all parts of the body, by an increase of the surrounding connective tissue.

Now, if we study kidneys with the idea of finding the earlier steps in this process, we find facts that support and prove this conclusion.

It is a well known fact among pathologists that in any kidney, and in almost any section of kidney, a careful search will reveal the presence of fibrosed glomeruli and atrophied tubules surrounded by increased connective tissue. A careful study of such lesions reveals the fact that the atrophic condition is far in advance of the hypertrophy of the stroma, and that we shall find completely atrophied tubules surrounded by a very loose connective tissue. We also find these tubules surrounded by the dense connective tissue that is characteristic of the kidney seen at necropsy, and these islands, as it were, surrounded by perfectly normal tubules. Further, the connective tissue which surrounds these atrophied tubules in normal kidneys is of the adult type and shows no evidence of active pro-

liferation, such as young cells or mitotic figures, and at first sight appears as if the intercellular fibrils were pulled apart by the decreasing size of the tubules. Also, in this stage the areas of such lesions are much larger than those in which the process is complete, which further indicates that the actual increase of the connective tissue is not so great as might be thought from a study of the chronic condition alone.

If we would attempt to describe the history of the process leading to the condition commonly known as chronic interstitial nephritis, it would be somewhat as follows: Whenever the kidney is the site of an acute nephritis of any severity, there are some of the functional units that do not regenerate but degenerate and atrophy, and the connective tissue in the immediate neighborhood undergoes some hypertrophy and contracts into the loose cicatricial form. Later, following another attack of acute nephritis, more tubules undergo the same process. This process continues until considerable part of the kidney is involved. As soon as the reduction in the number of tubules becomes considerable, the remaining tubules undergo compensatory hypertrophy. In later years some of these hyperplastic tubules and some of the more normal tubules become plugged with casts or by some other means, and the epithelium undergoes an atrophy from the center outward. Thus we have the picture seen in the sections of the small, red, granular kidney, namely, areas of increased connective tissue in which are to be found the epithelial cords representing former tubules, and the whorls of connective tissue

Fig. 5.—Hyperplastic descending arm of Henle's loop in chronic senile nephritis; × 150.

representing former glomeruli; hyperplastic tubules with fairly normal epithelium; hyperplastic tubules with atrophied epithelium and filled with casts or other material and between which there is little if any more connective tissue than in the normal kidney, and tubules in all stages between these and the cords mentioned above.

Therefore, since we find that the connective tissue increase follows and does not precede the reduction of the parenchyma, and that the increase of connec-

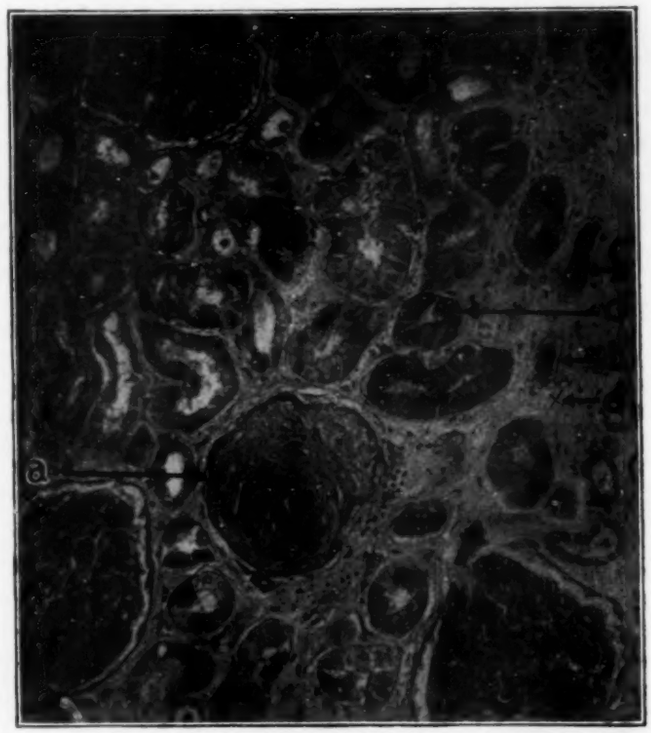

Fig. 6.—Area of senile nephritis in normal kidney: *a*, fibrosed glomerulus; *b*, *b*, completely atrophied tubules; *c*, tubules beginning to atrophy; *d*, loose connective tissue; × 150.

tive tissue depends on a form of parenchymal reduction that results in the diminution of the size of the tubules; and since we find areas in otherwise normal kidneys in which there is such reduction in the size of the tubules followed by connective tissue increase in the immediate environment, we are forced to the conclusion that there is no such condition as chronic interstitial nephritis, and that the condition now known by that name is the end-result of a process that begins in early life and is added to as the years go on, a process characterized by the degeneration and atrophy of some of the functional units following each attack of acute nephritis, and which results in later life in a very much reduced functional parenchyma, and an increase in the interstitial connective tissue. In giving this condition a name, if we would conform here to the custom of naming like conditions in other parts of the body, we would call it senile nephritis.

## ABSTRACT OF DISCUSSION

DR. ROBERT H. BLOCKMAN, Shreveport, La.: Few men have been favoring the conception that all degrees of kidney infection, beginning with simple acute nephritis to the end-results of chronic interstitial nephritis are one and the same condition, differing only in degree, and that the changes that take place in acute nephritis are only the end-results of a former condition of toxemia, and represent the response to cardiorenal or cardiovascular or renal conditions brought about by high blood pressure, which has been existing for a number of years and resulted from some toxemia or some acute infectious disease, such as typhoid or scarlet fever, or the use of

large amounts of coffee, tobacco, tea, meats, and other things that produce blood dyscrasia. The toxemia of an acute condition is but the end-result of disease; it is not the beginning of the condition, as for instance, a hypertrophied heart which is an end-result of some other disease in which too much of a load has been thrown on the heart and the heart must hypertrophy in order to overcome the difficulty. I have felt for a long while that we cannot recognize any difference in nephritis, as to whether it is parenchymatous or interstitial. They are one and the same condition, in the beginning probably interstitial, a preliminary process to a parenchymatous infection.

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# METROTHERAPY, OR THE MEASURE OF VOLUNTARY MOVEMENT

## ITS VALUE IN SURGICAL RECONSTRUCTION

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The influence of morale on the return of physical function in cases of injury to the bones, joints, tendons and muscles is striking, and a potent factor in the progress of recovery. This has been demonstrated again and again in military hospitals where hundreds of our wounded soldiers were spending months in convalescence from severe disabilities or from plastic operations. The progress of recovery in many cases was so slow and painful that improvement was not perceptible to the patient. It was not surprising, therefore, that many became despondent, took little interest in helping themselves, and grew either disgruntled or quite indifferent to their present surroundings and to future usefulness. This developed into a

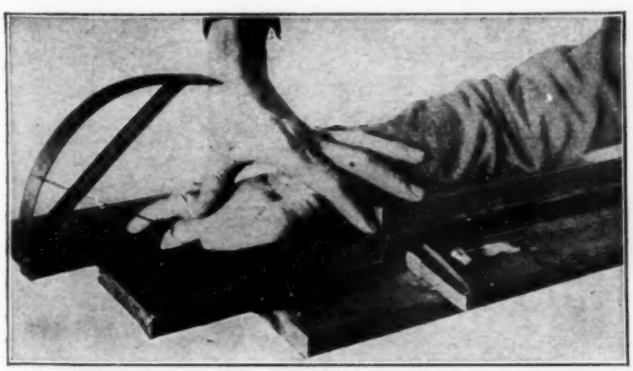

Fig. 1.—Apparatus for measurement of finger flexion-extension.

problem of morale of a type that exerted a most dangerous influence not only on the physical progress of the individual himself but also on his fellow patients.

Occupational therapy helped to solve this serious problem in our reconstruction hospitals by diverting these men from themselves and from a morbid concentration on their personal ailments, and supplied, in exchange, an interesting occupation in a constructive bit or work. The change in morale was rapid and striking; men who seemed most morose and unresponsive were frequently the first to show improvement under the influence of some form of vocational therapy. They became happy, anxious to get well and do something, confident that their disabled limbs would be of some use once more.

The explanation of this change in morale lay in the fact that that energy of mind which formerly had been concentrated on self and morbid introspection

Fig. 2.—Apparatus for measurement of wrist adduction-abduction (above). A separate hand piece adapts this instrument for wrist flexion-extension, as shown below.

was now directed into other channels, namely, the creation of some simple but diverting object, a child's toy, perhaps, or a bead watch-fob, or a piece of carpentering. The sense of satisfaction derived from this work transformed the mental attitude from one of indifference or downright antagonism to one of cooperation with the surgeon, and a desire to help oneself.

Vocational therapy proved invaluable as an adjunct to the postoperative care of those cases requiring surgical reconstruction in our military hospitals, and the same therapeutic measures applied to our industrially injured in our civilian institutions will yield as great benefits. The author has been particularly impressed, both in military experience and in civil practice, by the efficiency of active motion as a form of postoperative treatment. By some type of vocational exercise, in which the disabled limb is brought into play, not only is the morale influenced by proving to the patient that use of the injured member *is* possible, but a healthy stimulus to bone growth and tissue metabolism is afforded. Passive exercise, such as massage or Zander treatment, cannot accomplish the same results. The ideal combination of treatment over the postoperative period is some form of selected vocational therapy, carefully supervised, thoroughout a large portion of the day in conjunction with a short period of physiotherapy. Many factors enter into the progress of functional improvement, but of no little importance is the mental attitude of the patient himself; any measure that stimulates morale aids in stimulating recovery.

"Metrotherapy" means treatment through measurement. It is not a treatment in the same sense as medical or surgical treatments, physiotherapy or occupational therapy. It is, rather, a means of demonstration to the patient just what effect his other forms of treatment are producing. By means of accurate measurements of the amplitude, strength and rapidity of voluntary movement of the impaired joint or limb, the patient is shown the nature and the rate of his recovery. One of its greatest values lies in its psychologic effect on the man in interesting him in the progress of his own case. The measurements of the first day show him the extent and the nature of his injuries, as compared with the record of a normal individual. Succeeding measurements show how rapidly he is improving, and indicate how long treatments will be necessary.

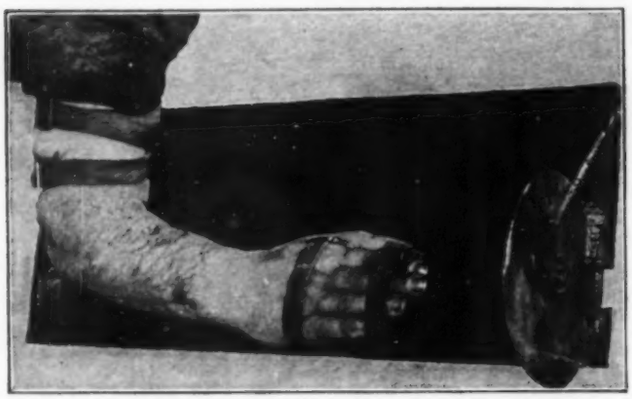

Fig. 3.—Apparatus for measurement of forearm pronation-supination.

It is hardly possible for one who has not seen the measurements taken to realize the interest the patient takes in his progress. He may be apathetic on the first day, but he usually becomes exceedingly interested by the second or third measurement. While the amount of voluntary movement is, of course, dependent on a large number of factors, improvement is as much dependent on the amount of personal effort put into the exercise as on any one factor. Even a small gain is most encouraging, and the patient is urged to try to beat his former records. These factors induce a maximum of voluntary effort and create a healthy interest in the mind of the patient. Moreover, the spirit of competition enters in—competition not only with himself, in beating his earlier records, but competition with his fellow patients who, like himself, are working perhaps in the vocational shops and receiving physiotherapeutic treatment each day for injuries equally severe. It has not been an uncommon experience to hear these men discuss their gain in degrees while waiting their turn in the massage-room, or in the hospital corridors. Many a patient who at first was indifferent to any form of treatment became responsive and eager to be helped and to cooperate in every possible way when he discovered that he was making a gain of 5 or 10 degrees each week in return function in an injured ankle, wrist or knee. And the striking influence of the changed morale on rapidity of improvement was noted by all who were working for the recovery of the patient.

Coincident with the beneficial influence on the patient is the importance of an objective set of accurate measurements to the surgeon, masseurs, the vocational director and to others interested in the progress of the case. The record serves a purpose similar to that of the temperature chart or the sphygmomanometer. In the first place, it indicates whether recovery is taking place as it should. If not, a change of treatment may be necessary, or possibly an operation. Then again, if recovery is not taking place uniformly, this is brought out in the measurements, and the chart indicates where most attention should be directed. When the surgeon has a large number of patients under his care, it is impossible for him to remember the condition of each case, its needs and its progress; by a system of accurate and clear records, it is an easy matter for him to see at a glance just where the patient stands.

The value to the plastic surgeon of an accurate chart of functional improvement is well illustrated by a case while one of us (Albee) was chief surgeon at U.S. Army General Hospital No. 3, at Colonia, N. J. In making rounds, the chart-room in the department of metrotherapy was visited, where the charts of the progress in return function were studied in a large number of cases. One chart stood out strikingly, in that after the showing of a very small initial gain, no progress whatever was indicated by the graph; in fact, a portion of the curve showed an apparent relapse. On immediate investigation of the case, it was found that there was some question of the mentality of this patient, who was recovering from a gunshot wound of the right elbow. His vocational teachers complained that he took no interest in the work, and it was with difficulty that he made the slightest effort. A neurologic examination revealed the mentality of a child of 10 years. This explained, to a large degree, the unreceptive state of mind of the patient and the futility of attempting to stimulate his cooperation, or of expecting satisfactory maintenance of morale.

The foregoing instance serves to emphasize the practical use of such a system of measurements in a large hospital service such as that of Colonia Hospital, at which at one time more than 2,000 patients were enrolled, and more than 90 per cent. of these patients requiring surgical care. It is naturally difficult for a surgeon to follow intelligently the details of the convalescence of a large number of patients; and were it possible, by an ordinary physical examination, to measure accurately return of function, it would be most difficult for him to remember the stage of recovery of the individual at his last measurements.

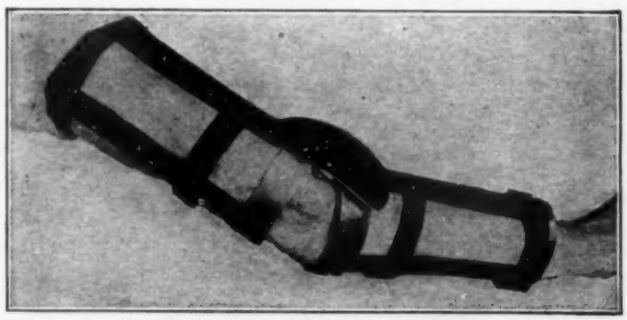

Fig. 4.—Apparatus for measurement of elbow flexion-extension. A larger instrument of the same kind is used to measure knee flexion-extension (Fig. 6).

Realizing the value of carefully kept records of progress of functional return, both to the surgeon and to the patient himself, a well-organized department

of metrotherapy was established at Colonia Hospital in the early months of its activity. Thoroughly equipped with apparatus adequate to measure the return of function of the important anatomic regions, the department proved to be a most valuable adjunct to the surgical service in managing convalescence in the large number of difficult surgical cases under treatment there.

Fig. 5.—Apparatus for measurement of shoulder adduction-abduction. This apparatus may also be used for the measurement of shoulder flexion-extension. In making measurements of hip flexion-extension and adduction-abduction, this apparatus may be used by adjusting the protractor over the center of rotation of the hip joint.

The apparatus used by the metrotherapeutist in the measurement of return function included instruments especially designed and constructed to record the movements of the individual joints. Apparatus was designed to measure the amplitude of flexion - extension of the finger (Fig. 1); flexion-extension and adduction-abduction of the wrist (Fig. 2); pronation - supination of the forearm (Fig. 3); flexion-extension of the elbow (Fig. 4); flexion - extension and adduction-abduction of the shoulder and hip (Fig. 5); flexion-extension of the knee (Fig. 6); flexion-extension of the ankle (Fig. 7); and inversion-eversion of the ankle (Fig. 8).

This apparatus has been supplemented by more or less standardized instruments and methods for the measurement of strength and rapidity of movement. Metrotherapy differs from other forms of measuring movement which have been used and described, in that the apparatus has been constructed on such accurate and yet simple principles. The instruments devised, moreover, are adequate for measurement of all types of extremity and joint injuries. The purpose and technic also differ from other methods in that metrotherapy does not include exercise or passive movement.

At Colonia Hospital more than 600 different men reported for measurement in the six-month period January to July, 1919. They came from the orthopedic wards, from the department of physiotherapy, or as an assignment in occupational therapy. All types of injuries to the joints and extremities were encountered in these cases; many of the patients were recovering from serious plastic operations, such as replacement of extensive loss of bone by the bone graft, nerve sutures, and the like. Cases of injury resulting in partial or complete loss of voluntary movement in some part of the body were classified in the three groups: (1) adhesions, including fibrous and bony ankylosis; cicatrizations of muscles with bone, tendon, skin or other muscular tissue; muscular atrophy, and loss of bone, tendon or muscular tissue; (2) peripheral nerve injury, and (3) central nerve injury.

Measurements were taken two or three times each week, and recorded on cards. As soon as several records had been obtained, a graph was made to show clearly the nature and rate of recovery. The department proved to be most successful in handling large numbers of cases. The accuracy of the methods served in a great measure to impress the individual patient and to give him confidence in putting forth his best effort. An interesting feature of this work lay in the fact that the instruments devised and used at Colonia were actually made by the patients themselves in the hospital curative workshops. Some of the men reporting for measurements were the ones who had been engaged in the manufacture of these very instruments as a part of their assignment in vocational therapy. The apparatus made by them was thus, in turn, used to measure their functional progress stimulated, in large degree, by this vocational work.

Three cases, herewith reported, are typical of the records of these men. In the accompanying graphs, the ordinates represent improvement (amplitude measured in degrees; strength in pounds or kilograms; rapidity in taps in fifteen seconds). The abscissas indicate the number of days over which the record extends.

### REPORT OF CASES

CASE 1.—Private L. R., an Italian who had been a stonemason before joining the American army, was injured in both hands and both wrists in the Battle of Fismes, Aug. 10, 1918, from the explosion of a German hand grenade which he unsuccessfully attempted to throw back into the enemy lines. Its explosion produced a compound, comminuted fracture of both wrists, and the metacarpal joints of the third finger of the right hand and of the fourth finger of the left hand. Ankylosis of these joints resulted. The fifth metacarpal joint of the left hand was practically destroyed, and the finger was flexed by contraction. There were, however, no nerve lesions in this case. The little finger of the left hand was amputated shortly after the patient's admission to Colonia Hospital.

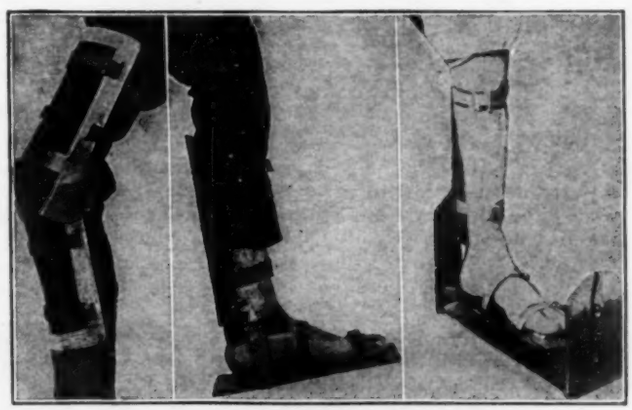

Fig. 6.—Apparatus for measurement of knee flexion-extension.

Fig. 7.—Apparatus for measurement of ankle flexion-extension.

Fig. 8.—Apparatus for measurement of ankle inversion-eversion.

Measurements in metrotherapy were begun in January, 1919, and these were continued until the patient's discharge in the following May. Figure 9 shows graphically the record of functional progress of the right hand over a long period of time. The graph indicates the records for piano trilling for fifteen seconds by alternate taps of *A*, second and third fingers, and, *B*, third and fourth fingers. A normal record for

either set of fingers is about 100. *C* in the graph indicates progress in wrist adduction-abduction (the normal is 100 degrees). *D* in the graph indicates flexion-extension of the second joint of the middle finger (the normal is 120 degrees).

This man began wood-working with hand tools in the department of vocational therapy, in the early part of February, 1919, and this, no doubt, accounts largely for the rapid gain brought out by the records at this time. Massage and curative gymnastics were other important forms of treatment. The patient worked hard and earnestly, and, considering his serious disability, his recovery was remarkable.

CASE 2.—Corporal C. S. was shot through the middle third of the right forearm at Château-Thierry, July 31, 1918, resulting in a compound comminuted fracture of radius and ulna. On admission to Colonia Hospital, about two months later, the wounds were healed and the general condition of the patient was good. There was nonunion of the fractured bones, and a bone-graft operation was subsequently performed, in which a graft from the patient's right tibia was inlaid into the right ulna. Following the removal of the plaster cast, in which the arm was immobilized for ten weeks, the patient was given daily treatments of gentle massage and baking to aid in the proliferation of the graft and the strengthening of its union.

This man was also assigned work in vocational therapy, consisting of sawing and use of the plane. He likewise worked each day at the typewriter, in order to exercise wrist and fingers, as well as for the purpose of making himself proficient in stenography. Measurements were begun in metrotherapy to show the effect of his other treatments. Figure 10 shows the progress in return function for a period of nearly two months. Four months after operation, this patient was transferred to a convalescent camp; roentgenographic and physical examination made at this time showed perfect union and healing.

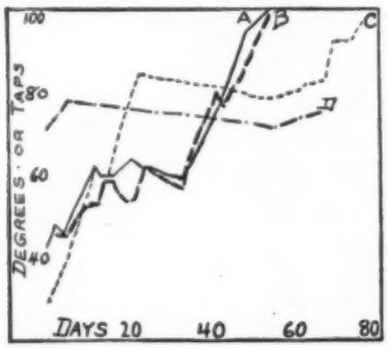


Fig. 9 (Case 1).—In this case, there was ankylosis of wrists and finger joints, following severe gunshot wounds. Progress in return function of the right hand is shown graphically. *A*, piano taps in fifteen seconds with second and third fingers (normal is about 100); *B*, piano taps in fifteen seconds with third and fourth fingers (normal is about 100); *C*, wrist adduction-abduction (normal is 100 degrees); *D*, flexion-extension of second joint of middle finger (normal is 120 degrees).

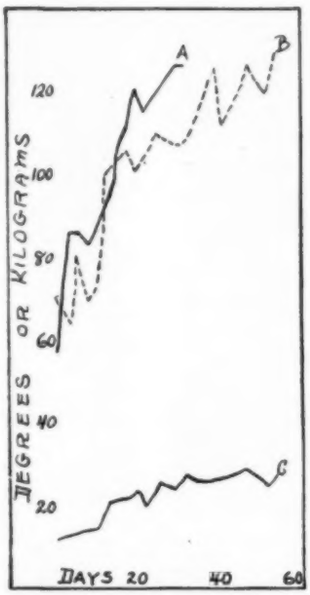


Fig. 10 (Case 2).—Progress in return function of right forearm, in a case in which an ununited fracture of the ulna was treated by bone graft. *A*, gain in elbow flexion-extension (normal is 130 degrees); *B*, progress in forearm pronation-supination (normal is 225 degrees); *C*, increase in strength of grip with hand dynamometer (normal is 60 kg.).

CASE 3.—At the Battle of Verdun, Sept. 28, 1918, Private J. S. was wounded by a fragment of a high explosive shell which passed through the right elbow, producing a compound, comminuted fracture, with resulting ankylosis. The arm was incised, and fragments of dead bone were removed at Colonia Hospital. Carrel-Dakin treatment was instituted, and continued until the wound was sterile.

This patient was formerly a college athlete, and as soon as the wound was healed, he began pitching baseball. This was the best possible form of exercise for breaking down adhesions in the elbow-joint, and recovery in his case was very rapid, as is shown in the steady, upward trend in Figure 11. At the time of the last reading, before his discharge, the elbow had regained normal flexion, but lacked 32 degrees of full extension.

## COMMENT

Whatever has been said in the foregoing observations on the value of organized postoperative therapy in our military reconstruction hospitals applies equally well to large numbers of injured in our civilian institutions. In 1913, F. L. Hoffman [1] estimated that in the industries, annually, 25,000 were killed and 700,000 were injured so seriously that they lost four weeks, or more, of work. A great improvement in methods and practice in civilian hospitals will undoubtedly result from our experiences in military reconstruction work. It is believed that in the treatment of great numbers of these industrially injured there is a place for metrotherapy. Moreover, in cases of spastic hemiplegia and diplegia, as well as in other forms of paralysis due both to hereditary and acquired causes, a record of regular measurements will prove valuable to patient and to surgeon.

Accuracy of observation and control of both postoperative and traumatic cases cannot be too strongly urged. Careful supervision during convalescence is particularly necessary in cases of bone transplantation, in which the graft must be adequately protected and supported during the slow development of its diameter. Long confinement of the part during the requisite immobilization in plaster leaves contractures and adhesions which must be worked out. Although active motion is highly recommended in these cases, vocational retraining must be done cautiously and, in the early convalescence, under direction of the surgeon, lest fracture occur or the graft become dislodged. Likewise in cases of tendon transplantation, there must be slow and painstaking reeducation of the brain cells, whereby the tendon may learn to perform an entirely new function. Adequate postoperative care in these cases of surgical reconstruction is as essential to successful results as skilful surgical technic. Many a practitioner has suffered severe criticism, not because of any failure to secure the reduction of a fracture and its maintenance in a proper position, but because he was too anxious to discharge his patient, or failed to follow and properly direct the convalescence.

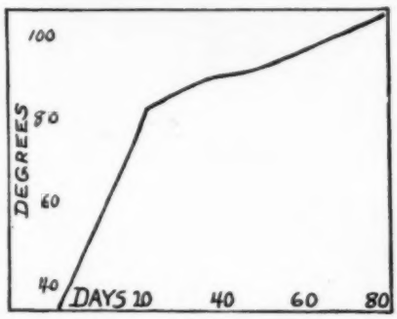


Fig. 11 (Case 3).—Return function in elbow flexion-extension, following ankylosis of elbow from gunshot wound. This patient progressed from 34 degrees to 104 degrees in the seventy-nine-day period recorded (the normal is 130 degrees).

1. Hoffman, F. L.: Bull. 157, U. S. Labor Statistics.

**Early American Science.**—"At the commencement of the Revolutionary War we had one medical book by an American author, three reprints and about twenty pamphlets."—J. S. Billings.

# SOCIAL AND MEDICAL ASPECTS OF CHILDHOOD DELINQUENCY*

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In surveying the records of the Children's Court of New York City during the last three years one finds that during that time nearly 45,000 children under the age of 16 years have been taken to the Children's Court either by school authorities, parents, social organizations or police officers. They are taken there for various delinquencies or because of improper guardianship. These figures, from an economic standpoint alone, furnish food for reflection; from a social standpoint the question at once arises as to what may be the reasons for this seemingly large number of delinquencies and conduct disorders in children. Do these 45,000 children end up in court—on the technical charges of petty larceny, assault, robbery, unlawful entry, disorderly conduct, etc.—because there is something inherently wrong with their mentality—"born criminals," as one hears stated? Is the adult criminal class to be recruited from the ranks of these delinquent children? Is there some defect in the oversight or management of children of school age that predisposes them to delinquency? Are environmental and social conditions at fault? These are some of the questions one may ask.

The public school authorities of New York City feel the need of a fuller understanding of these problems. They have nearly 300 truant officers, a number of schools and protectories where truant and delinquent children are sent, often to remain in residence; they have the assistance of child welfare organizations, police and court officials; but they desire an approach other than from the custodial standpoint, which will, if possible, reveal causes and origins. With a view to ascertaining what can be learned of these questions from the medical and psychologic points of view through a thorough investigation, they have invited the National Committee for Mental Hygiene to carry on a study in one of the probationary schools of the city. The work has been done by a physician, a psychologist and a social service worker, thereby approaching the subject from all angles, so that such questions as the physical condition of the child, the mental state, the existence of mental deficiency, and the importance of social and environmental factors may be determined and their significance estimated. In the examination of about 150 children, these conditions are observed as causative factors in delinquency:

## NERVOUS CHILDREN

About one third of these 150 boys, ranging from 8 to 16 years of age, may be classified as nervous children; that is, they show various symptoms of either mild or severe character, constituting a neurosis. It is thought that the terminology which is generally used in describing symptoms in adults is not entirely satisfactory in respect to children. Such terms as psychasthenia, compulsion neurosis and claustrophobia convey a definite meaning to us; at least, in a general way they imply a well established neurosis often likely to be of considerable duration, and resistant to treatment. One encounters similar symptoms in children; but to apply the same terms. implying the same duration and outcome, would be misleading. In children these states of anxiety, emotional conditions, fears, nervous habits, etc., are, as a rule, much less fixed in character. They are of simpler origin and often are quite amenable to treatment. For this reason the formal terminology used with adults is avoided.

*Hyperactive Types.*—A considerable number of these children, especially those under 10 years of age, show symptoms of overactivity. They are overactive both in the motor and in the psychic spheres. They are restless, sleepless, constantly on the go, and at the same time often are ill nourished and exhausted. Intellectually they are alert, but are inattentive and distractible in their studies, and are inclined to be mischievous and irritable. Such symptoms existing over a period of weeks or months constitute a neurosis. Causes of this condition are not always apparent, but probably arise from a variety of sources. The dietary is evidently one factor that may cause such symptoms. A number of these hyperactive children, because of improper food, are undernourished, and this condition apparently gives origin to overactivity and irritable states. This cause could be established in certain instances. After Public School 37 had been going for some time, a lunch was introduced at the noon hour. Several of the hyperactive children gained quickly in weight, and with the improvement of their nutrition their symptoms entirely disappeared. In other cases an insufficient dietary with overstimulation was found to be at fault. The consumption of large amounts of tea and coffee resulted in overactivity, and with the elimination of these stimulants from the dietary, improvement occurred. One child, aged 11 years, of the hyperactive type, recovered when prohibition was enforced. He had been taking considerable whisky at meals, and often was partly intoxicated on Sundays and holidays.

*Hypo-Active Types.*—Some children show just the reverse of the foregoing picture. They are languid, lacking in energy, do not have the normal interest in games, and appear physically and mentally exhausted. The causes of this condition are not quite so clear, but in some cases overexertion, such as work after school—morning paper routes, etc.—appeared to be an important factor, associated with an insufficient dietary.

*Emotional Types.*—A number of these children have nervous symptoms as shown by lack of emotional stability. They are subject to episodes of irritability, anger or impulsiveness. Such children are often unduly sensitive, and overreact to minor irritations. Because of this unstable emotional state they cannot take part in the ordinary games and amusements afforded the other children. They misinterpret and misunderstand the motives of others, take offense when none is intended, and as a result are teased and imposed on. Such a mental state lasting over a period of months may become an established habit.

The causes of this hyperemotional state appear to be less physical than the conditions mentioned above. It may accompany hyperactive states, but is not necessarily associated with overactivity. In many of these cases there is good reason to believe that the causes are psychologic. It must be remembered that the mind of the child is very sensitive to the influence of upsetting psychologic factors at home or in the school life. When there is any special distress at home, or nervous tension or irritability, this is felt by the child and becomes manifest in his emotional condition. Alterca-

* Read before the New York Neurological Society, May 4, 1920.

tions between the parents, nervousness of the mother, unnatural friction in the family of any kind, give the child a sense of tension oftentimes, although the causes may not be fully understood. Such mental maladjustments find expression in emotional changes. A child, where there is family discord, may feel a sense of social inferiority. He becomes self-conscious, sensitive and irritable with other children. Dr. William L. Healy of Boston, who has had such broad experience with all these cases, attaches much importance to the foregoing factors as causes of mental conflicts in children. Such upsetting influences may be quite unsuspected by the parents and teachers, and revealed only by confidential conversation with the child. Difficulties in the school, such as inability to learn some subject, or perhaps to get along satisfactorily in the class, may cause maladjustments which can be corrected only by changing the child to another class or to a different neighborhood. Needless to say, not all psychologic causes arising in the home, the community or the school can be enumerated, but it is well to remember that the developing mind of the young child is sensitive, in ways that may be unsuspected, to unfavorable psychologic influences, and various neurotic symptoms may result.

In respect to the treatment of these states arising from mental maladjustments, it has been shown that an exploration of the cause—talking it out with the child and correcting the situation by changing the environment—often brings about a very prompt cure.

*Anxiety Types.*—States of anxiety accompained by fears and obsessive ideas of various kinds are sometimes encountered, and may be the result of some concrete experience to which the child has been subjected. A case of this kind is recalled in which a boy had been in an anxious, fearful state for nearly a year. His trouble had commenced after he saw a street fight in which a man was stabbed and severely injured. The boy improved greatly after a few explanatory interviews, and in a short time was able to go on with his work, well on the way to recovery. Another boy, aged 10 years, became fearful and would not go from one room to another alone. His relatives could not understand the cause of the difficulty, but in the course of the interview it was found that his older brother, when the mother was out, dressed up in a red cloak, represented himself as a lion and frightened his little brother. The representation proved too realistic. This case should not be considered a phobia as we think of it in the adult; the fears promptly disappeared with the removal of the cause.

A number of these nervous children suffer from stammering to a varying extent. By studying these cases from every point of view, one is impressed by the fact that the underlying causes of stammering should be attributed to a neurotic condition. These children are excitable and lack emotional control, and general treatment aimed at removal of this neurotic state is the proper preliminary procedure for the treatment of stammering. A number of cases in the school have improved remarkably under general management alone. I recall a case cited by Holt in his textbook, of a young child who began stammering after a serious physical illness. He was sent to the country, and on improvement of his physical condition, the speech defect disappeared. I feel that the treatment of the underlying nervous symptoms is very necessary in this particular type of case, supplemented by such special treatment as is indicated.

*The Endocrines and Nervous Children.*—During recent years much interest has arisen in the study of faulty functions of the endocrines in relation to the neuroses, to mental retardation, and various other mental manifestations, including conduct disorders, particularly of the adolescent period. From these studies it seems probable that a group of cases, formerly not very clearly defined, will be identified as attributable to disordered endocrine function. This group, of course, must be kept in mind in the physical examination of children, and in the interpretation of the various symptoms found. In respect to these cases it may be said at this time that when neurotic children are receiving such glandular therapy as is indicated, it is desirable that they receive supervision in a general way as well. Their mental dulness or nervous symptoms or conduct disorders are likely to be attributed to some cause other than their physical state, and so proper arrangements have to be made for them in the school, in the home and in the community. In other words, glandular therapy should be supplemented by general measures, such as apply to all other maladjusted cases.

### MENTAL DEFICIENCY

The question of unrecognized mental deficiency as a basis for delinquency and conduct disorders is one that has attracted considerable attention in recent years. Psychologic surveys have been made in schools and have indicated that mental defect as an underlying basis for conduct disorders is of considerable importance. These findings, however, should not confuse the main issue in respect to delinquency. When a child is found to be defective, mental defect should be the primary diagnosis and the delinquency considered as a secondary symptom. With this classification in mind, psychologic surveys are of great value in the schools, for by this means morons are early recognized and much time can be saved by giving them proper vocational training and training in conduct, rather than by attempting to teach them in purely intellectual directions. There is reason to believe that many of the conduct disorders of this class can be avoided by systematic training when they are young.

Valuable as psychologic surveys are to determine mental age, it should be appreciated that they are in no way adequate for the complete mental examination of the child. A child may make a good showing intellectually, but emotionally be very unstable and neurotic. Such a child also may be in advance of his grade, but have very little social experience and be unable to get along with his fellows. Ill-nourished, nervous children are not infrequently in advance of grade, and any examination that measures the intellect alone without a thorough investigation of the physical, social and emotional condition is incomplete.

### PERSONALITY AND DELINQUENCY

Any one first coming upon the problem of delinquency in childhood would doubtless ask whether, after all, there is not something in the inherent mental makeup of these children which predisposes them to conduct disorders. From our observation of adults we should be inclined to this view. We find that the adult delinquent shows traits of character or of constitution which appear to be inherent, and this personality explains to a great extent the basis for the abnormal conduct. In frank mental disorders, a study of the underlying personality of the individual has also been of great value

in determining the diagnosis and prognosis, and in clearing up the problem generally. But in the case of children one is not warranted in interpreting the symptoms found on the basis of anything inherent in the personality. During childhood the character is in the formative state, and to say that inherent characteristics already exist is assuming a great deal, particularly in view of the fact that one finds so many things in the environment which appear to cause the symptoms. It is true that in children one finds the emotional instability, the irritable, suspicious tendencies, and the lack of moral control which have been termed "psychopathic" when encountered in the adult. But these traits may well be dependent on very evident factors, and are amenable to treatment. They therefore can scarcely be regarded as inherent. A study of personality in children is of great interest when one considers what may happen in case such symptoms are allowed to continue year after year until adolescence is reached. There is reason to believe that habits become firmly fixed in this way, and in adult life we may, indeed, encounter an established personality, but one which has been acquired because of an unfortunate chain of circumstances, rather than inherent.

One does, of course, find children with special mental characteristics. There are the children with particular aptitudes, who do very well at one kind of work and fail at another. They are uneven in school work, have hobbies, and show brilliance in some things and lack of interest in others. These unusual children are likely to become dissatisfied with school because the tendency is to make them conform to the general routine. It is necessary to make special provision for such children, as they often turn out in an unsatisfactory way unless they receive special attention. Another type of child is one of rather limited capacity so far as school attainments are concerned. Children of this type often come from parents of the peasant class of Europe, and while they grade as dull by the psychologic tests, they are nevertheless intelligent and normal in the ordinary affairs of life; but they are slow in acquiring school knowledge, partly probably from lack of intellectual ability and partly from lack of interest in this direction. They very often become truant and subsequently delinquent. Much of this could be prevented by enriching the school curriculum, and adding vocational classes. A child of this kind may have excellent inherent tendencies, but because of constant friction in school and inability to get along he may become rebellious and antisocial. Attempts at forcing him to comply with usual standards are not successful, and the problem must be solved in other ways.

### ENVIRONMENT AND DELINQUENCY

In view of the unfortunate home conditions and environment of many of these children, one wishes to know to what extent these factors have to do with conduct disorders and delinquency. From the psychologic standpoint they probably operate in several ways. If a small child before school age is left with some one in the neighborhood while both parents go to work, he receives very few favorable home influences, and is likely to grow up entirely untrained. Such children learn very little discipline; the hours of meals and of sleeping are most irregular, for example; and in many ways they fail to receive training or to acquire habits of action which enable them to get along with others who have had such training. When they come under the regularity and system of school they are quite unprepared to comply with the regimen. Such children are likely to be very difficult; and if allowances are not made for them while they are being instructed, conflicts arise. If they do not receive proper training in their earlier years of school life, it is difficult for them to acquire it later. They do not fit in well with the group, and therefore maladjustments result.

Children who do not have proper guardianship suffer in other ways. From early years they are often obliged to look out for themselves as to their ordinary needs and desires. They begin work as soon as they possibly can be of value to any one, and are imposed on by adults. The immature mind of a child competing, more or less, with an adult, often acquires the undesirable qualities rather than the better ones. If the child goes on in this way for some years he learns a great deal of trickery and slyness, especially if he has been involved in a few delinquencies. When he becomes an adult, if his tendencies remain uncorrected, he continues in delinquent ways. The condition is not to be considered inherent, but acquired. Before puberty, if such a child can be taken out of his surroundings and brought under proper influences, there is reason to believe that he will turn out favorably; but after he has reached puberty and left school he becomes independent, and a desirable outcome is less probable. In any case, in view of the environment and early psychologic influences, one surely should hesitate to consider such cases as inherent. A study of character formation and personality which takes into account the experiences of the first ten years of life is most profitable in interpreting the characteristics of the mind as we find them in adult life.

It is by no means in the neglected homes or in cases of improper guardianship that all of these unfavorable psychologic influences exist. Often in the best of homes, with the oversolicitude of parents for their children, or with an unhealthy mental atmosphere from various causes, influences quite as unfavorable, from the psychologic standpoint, occur, and certainly delinquency is not confined to children from poor homes.

### INTERPRETATIONS OF DELINQUENCY

In drawing general conclusions from this survey, a few of the most striking features may first be indicated. From a careful observation of delinquent children one cannot but feel that by proper management these conduct disorders might, to a great extent, have been avoided. As a rule, it appears that the child has been misunderstood, or at least, the problem has been misunderstood. Efforts are made to force the child to do something that he is entirely incapable of doing. He may be nervous, lack emotional control or intellectual ability in some directions, and so find it difficult or impossible to acquire an interest in the tasks given him. From this I do not wish to infer that I would discontinue school training for boys who do not get on in the usual way; but I would say that special provision is required for those who, for the reasons enumerated above, cannot conform to the regular schedule. It is useless to attempt to force them—worse than useless, as results show.

These boys are the material from which delinquents are made. They are not inherently "bad." As stated above, they are simply nervous, or are dull in scholastic things, or they are boys with particular abilities who

cannot tolerate routine; we see many such adults. Why these children become delinquent has been indicated; and from that it might be inferred that delinquency in childhood is, after all, a rather simple affair; so it is—in the beginning. Delinquency is often a minor affair at first, occurring in a child with no very unusual tendencies, who cannot adjust himself to a certain situation. With a little understanding at this time and proper preventive measures the whole thing may be corrected; but if allowed to continue, these minor affairs without preventive measures become serious in later years. If, during the developmental period, maladjustments continue and the child establishes undesirable habits of conduct and action, one cannot be sure of the outcome in later life. Probably many adjust themselves spontaneously after they leave school and are capable of making such changes and provisions for themselves as are necessary to get along. Apparently others who might have been corrected in early childhood go on to adult delinquency. It is much easier to continue established habits of conduct, even if they are bad habits, than to form new ones. Sufficient incentive may not arise to bring about a change, and these persons drift on to repeated childhood delinquencies and to adult disorders of the same character.

This way of regarding the situation would explain the contrast in personality one finds between child delinquents and adults. In the adult the condition has become a part of the individual—indeed, it appears to be inherent; but with the child most observers now agree that no such personality can be demonstrated. In the past we have nodded our heads wisely and repeated that these things, after all, were inherent from the start, implying that little was to be done about it. This attitude arose from our drawing conclusions almost exclusively from observations of the static personality one encounters in adults.

It is almost needless to say that preventive treatment is the only rational way to manage childhood delinquency. Every one should appreciate that there always will be special children who require special consideration. These children are not intrinsically abnormal—they may be very intelligent; but when for any reason a child shows delinquent tendencies, the parents, teachers and others coming in contact with him are greatly upset. Instead of trying to keep the matter secret and regarding it as a disgrace, as parents are inclined to do, or of attempting coercion, as others may institute, desired results are obtained only by painstaking investigation of the problem from every point of view, and then applying such remedies as are indicated. The social attitude in the past toward conduct disorders of any kind has doubtless stood in the way of a just understanding of them, and this seems to apply to children as well as to adults. Such an attitude is surely based on mistaken ideas.

Economic provisions aiming at preventive treatment for these children would not be difficult. Provision should be made for the prompt examination of all cases showing evidences of not getting along, and this examination should be broad enough to cover the entire problem. Special classes in schools, and probably special schools with vocational classes, would be a gain from an economic standpoint, to replace truant schools, protectories and similar partly custodial agencies. Special examiners in medical matters pertaining to mental health as well as to physical, in psychology and in social conditions, would be less of an economic burden than the agencies now employed, and their services would be of constructive character aiming at preventive measures. Fortunately, the need of such arrangements is appreciated by educational authorities, and small beginnings have already been made in many places. It is to be hoped that these may eventually be firmly established and take their place as permanent institutions of the school system.

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## SUSPECTED ASYNCHRONISM OF RESPIRATORY MOVEMENTS IN LOBAR PNEUMONIA

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In a report on disturbance in the coordination of respiratory movements, which is ascribed to asynchronism in activation of the diaphragm and intercostal muscles, Coleman [1] says:

> Asynchronism of the respiratory movements is characterized by a separation of the moment of contraction of the diaphragm and intercostal (and other thoracic) muscles by definite, though variable, time intervals.

Farther on, the phenomenon is thus described:

> In the fully developed type of asynchronism, the diaphragm reaches the expiratory phase before the contractions of the intercostals set in, and the abdomen and chest rise and fall alternately. "See-saw" best describes the impression conveyed.

This description of the respiratory excursion of the thorax is vague, and reveals a lack of criticism in determining exactly what were the evidences of activation and of excursion from the intercostal muscles and what were the evidences of activation and excursion from the diaphragm.

Since the appearance of this article, I have seen three cases of lobar pneumonia in which there appeared the type of respiration described by Dr. Coleman. As he rightly says, the impression conveyed is that of "see-saw" between the abdomen and thorax; but such a statement cannot be accepted as proof of an asynchronism in activation between the intercostals and the diaphragm. The vague term "see-saw" does not identify the evidences of activation and of excursion of the diaphragm as exhibited by movements in the hypochondria and in the costal margins. Should there be activation of the diaphragm at a time when the intercostal muscles are not activated, there may be retraction of the entire thoracic cage in its transverse and anteroposterior diameters, but the costal margins in their entire extent are then drawn toward the median line.

My patients with lobar pneumonia who presented the phenomenon described by Dr. Coleman were two young women and one man 40 years old. The two women presented the phenomenon in a striking way. One had lobar pneumonia at the right base and one at the left, and they were both very ill. The respiratory phenomena in the two were identical, and a description of one of them will suffice for both.

The patient was about 25 years of age and weighed 125 pounds. The thorax was broad but had a notably small anteroposterior diameter. On the fifth day of the disease,

1. Coleman, Warren: Asynchronism of the Respiratory Movements in Lobar Pneumonia, J. A. M. A. 73: 1923 (Dec. 27) 1919.

when I first saw her, the temperature was 103; the pulse ranged from 140 to 160, and the respiratory rate varied between 50 and 60 per minute. The lips and finger nails were cyanotic. The volume of the pulse was not small, and should be described as having a normal volume but with marked celerity in the catacrotus. The patient was breathing as hard as she could, and the air hunger was so intense that it was very difficult for her to talk. It was quite apparent that the ventilatory function of her lung was being taxed to its utmost. The entire lower right lobe was infiltrated, and the entire lower left lobe showed evidences of pulmonary edema. During inspiration the abdomen was violently protruded and the outer portions of the costal margins and the hypochondria moved so violently in a lateral direction that they suggested the flapping of the wings of a barnyard fowl, but the movement of the median or inner halves of the costal margins was disproportionately small compared with the movement in their outer portions. It might be suspected that this manner of thoracic excursion was accompanied by rebreathing between the upper and lower parts of the lung, but this is very improbable in view of inspiratory enlargement of the thorax, which occurred in the transverse diameter throughout its entire length. During inspiration the lower end of the sternum was violently drawn toward the vertebrae, and the sternum as far up as Louis' angle shared in this movement. The manubrium itself was firmly anchored, but the entire sternum from Louis' angle to the xiphoid cartilage moved vertebrad on account of a retracting force which was applied at the xiphoid process. During inspiration it was also observed that the ribs on both sides of the sternum, as far as the midclavicular line, were retracted during inspiration. This retraction was plainly visible as far downward as the sixth rib. The seventh rib moved strongly in a normal direction, and from the seventh rib down, the ribs from the costal margin to the posterior axillary line could be plainly seen to have an exaggeration of their excursion in a normal direction. Moreover, when the upper ribs were traced into the axillary line, it was found that there they also moved in a normal direction; so that throughout the entire length of the thorax there was on inspiration a distinct increase of its transverse diameter in the midaxillary plane. It was perfectly clear that the ribs, from the second to the sixth inclusive, were retracted during inspiration as far laterally as the midclavicular line; but when the arches of these ribs were examined laterally from this line, they were found to have a distinctly normal bucket-handle movement. It is not conceivable that the intercostal muscles were activated as far as to the midclavicular line and failed of activation in those parts which lay to the median side of that line. So the inspiratory retraction of the median portions of the upper ribs and sternum must have been due to the fact that in this region the normal results of the activating force of the intercostals were overcome by some conflicting agent.

Dr. Coleman refers to J. Hughlings Jackson[2] as describing a similar case and interpreting the phenomenon as due to asynchronism in activation of the intercostals and diaphragm caused by morbid changes in the spinal cord. The cord disease was supposed to originate from the effect of pneumotoxins on its lateral horns. This flight of fancy would have been spared the writer if the activities of the intercostal muscles and diaphragm had been rightly interpreted. In his description of the patient's breathing, Jackson said: "The lowest part of his chest everted in inspiration, but the diaphragm *by itself* can evert the lowest ribs." In several articles[3] I have expounded the falsity of this statement, showing that eversion of the costal margins during inspiration is caused only by activation of the intercostal muscles. Neither activation nor excursion of the diaphragm causes outward movement of the costal borders. So the fact that the costal margins moved in a lateral direction proves that the intercostal muscles were activated synchronously with the diaphragm.

As stated above, in my patients the lower end of the sternum was violently retracted and the inner portions of the costal margins had a disproportionately small lateral excursion as compared with that of the lower and outer parts of the costal margins. Flattening of the midportion of the subcardial diaphragm accounts for this phenomenon. These patients had a globular enlargement of the heart. The enlargement was not great, but was sufficient to show a slight extension of the heart's area to both the left and the right, and there was also very marked increase in the systolic anterior thrust of the right ventricle. These patients had a cardiac rate which varied between 130 and 160. Moreover, inspiration was performed with the utmost effort the patients could employ. The intercostal muscles and the diaphragm were activated synchronously and to an unusual degree. Great protrusion of the abdomen, with strong eversion of the costal borders and great spread of the hypochondria, can be explained only by strong, synchronous action of the diaphragm and intercostals. Vertebrad retraction of the lower end of the sternum and median parts of the upper ribs was caused by flattening of the midportion of the subcardial diaphragm, which to a limited degree defeated the strong inspiratory effort; but a normal bucket-handle movement of all the ribs in the axillary lines proved all the intercostal muscles to have been activated synchronously with the diaphragm.

In Quain's "Anatomy" we find the statement that the portion of the diaphragm that is inserted at the lower end of the sternum may in some instances contain no muscle fibers. This fact has much importance in considering the inspiratory excursion of the lower end of the sternum. As a rule, when there is sufficient flattening of the subcardial diaphragm to cause inspiratory narrowing of the subcostal angle, the sternum is also retracted in a vertebrad direction. This is not invariably the case, for sometimes in cardiac dilatation there is inspiratory narrowing of the subcostal angle, while the lower end of the sternum moves in an anterior direction. It is quite possible that in the latter cases there are no muscle fibers in that part of the phrenic leaf which is inserted at the lower end of the sternum, so that flattening of the diaphragm under such conditions does not influence the direction the lower end of the sternum will take during inspiration. With moderate cardiac enlargements it is not uncommon to see distinct retraction of the lower end of the sternum in a vertebrad direction, when the subcostal angle still shows moderate widening during inspiration; and after the heart will have improved, the lower end of the sternum will move anteriorly during inspiration, and normal inspiratory widening of the subcostal angle will be resumed. In some normal subjects the lower end of the sternum does not move in an anterior direction, although the subcostal angle reveals perfectly normal inspiratory widening.

Dr. Coleman believes that the inspiratory sign described above indicates severe toxicosis of pneumonia. The phenomenon has a grave significance, but it is not caused by disease of the spinal cord. One of three patients referred to in this article recovered, and the thoracico-abdominal "see-saw" was replaced with

2. Jackson, J. H.: Lancet **2**: 1472, 1894.
3. Hoover, C. F.: The Functions of the Diaphragm and Their Diagnostic Significance, Arch. Int. Med. **12**: 214 (Aug.) 1913; Diagnostic Signs from the Scaleni, Intercostal Muscles and the Diaphragm in Lung Ventilation, ibid. **20**: 701 (Nov.) 1917; The Functions of the Intercostal Muscles, J. A. M. A. **73**: 17 (July 5) 1919; Diagnostic Significance of Inspiratory Movements of the Costal Margins, Am. J. M. Sc. **159**: 633 (May) 1920.

a normal inspiratory movement when the heart's rate and volume and the hyperpnea diminished.

The manner of excursion of the thorax here considered merely indicates moderate enlargement of the heart. The "see-saw" respiratory movement occurs if air hunger and hyperpnea supervene; for then there is exaggeration of inspiratory retraction of the sternum and of the adjacent costal parts, and this serves by contrast to magnify the large excursions of the hypochondria and epigastrium.

The foregoing criticism is offered because failure rightly to interpret respiratory excursions of the thorax is a fruitful source of error and may lead to profitless fancy when simple facts suffice.

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# IMPORTANCE OF THE VITAL CAPACITY IN THORACIC SURGERY*

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The act of inspiration consists of an enlargement of the thorax with a resultant inrush of air down the trachea and into the lungs in order to equalize the pressures of the air outside the body and inside the lungs. The act of expiration, on the contrary, is accomplished by a diminution of the thorax, which in turn forces the air out of the lungs. The amount of air, therefore, which is taken in and given out with each act of respiration, under normal conditions, is regulated almost entirely by the extent to which the thorax enlarges itself. The limit of possible enlargement is determined by a number of factors, important ones of which are the size of the individual, the flexibility of the thorax and the strength of the respiratory muscles. Hence it is evident that even so-called normal individuals may differ widely in their ability to enlarge their thoraces, and that those who have particularly strong respiratory muscles, athletes, for example, will show a greater ability to enlarge the thorax than other individuals of the same size who have poorly developed respiratory muscles.

John Hutchinson,[1] in 1846, published direct measurements which he had made on a large number of people, by means of his spirometer, of the amount of air which is inspired in ordinary respiration, and of the amount which is given out in the greatest possible expiration after the greatest possible inspiration. The former he called the "tidal air," and the latter the "vital capacity." The value of the vital capacity in the normal subject is very much greater than that of the tidal air. The difference is made up by the "complemental air," which is the additional amount that can be inhaled after an ordinary tidal inspiration, and the "supplemental air," which is the additional amount that can be exhaled after an ordinary expiration. Even after the supplemental air has been exhaled, there is still a considerable amount of air remaining in the lungs which is usually called the "residual air." The average values of these different volumes of air have been generally considered to be about as follows: the tidal air, 500 c.c.; the complemental air, 1,500 c.c.; the supplemental air, 1,500 c.c.; the vital capacity, 3,500 c.c.; the residual air, 1,500 c.c. More recently, especially through the work of Peabody and Wentworth[2] and of Dreyer,[3] it has been found that the generally accepted value of about 3,500 c.c. for the average vital capacity is very often greatly exceeded, and that men in general show a considerably higher value than women. Thus, the average in normal men of from 5 feet, 8½ inches to 6 feet in height was found by Peabody and Wentworth to be 4,800 c.c.; and one man, 6 feet, 3½ inches tall, had a value of 7,180 c.c. The average vital capacity in normal women over 5 feet, 6 inches in height was only 3,275 c.c.

Bearing in mind that the vital capacity represents in reality the greatest possible volume of air that one can voluntarily take into his lungs in addition to the already present residual air, it is evident that a determination of it in a particular case will afford a fairly accurate index of that individual's ability to compensate for any encroachment on his breathing surface. That is to say, an individual whose tidal air is only one third or one fourth of his vital capacity will have less margin of safety if his breathing surface is further diminished than one whose tidal air is only one seventh or one eighth of his vital capacity. The reason for this is that the inflation of the lungs is chiefly a purely passive occurrence because of the fact that with an expansion of the thorax, as in the act of inspiration, the pressure within the pleural cavities becomes increasingly less than that of the atmosphere, so that air from the outside rushes into the lungs to fill a partial vacuum. If negative pressure cannot be established, at least during some part of the inspiratory act, obviously the lungs cannot be inflated. The establishment of negative intrapleural pressure depends to a great extent on the ability to enlarge the thorax. This fact lends itself readily to experimental demonstration. For if an interference with respiration is suddenly created, the most frequent and characteristic response is an increase in the amplitude (or depth) of the respiratory movements, a type of reaction which represents a compensatory effort to diminish the intrapleural pressure to a greater extent in order to inflate the lungs. If, in spite of the maximum respiratory efforts, the individual is able to take in barely enough air to maintain life, it is clear that he will be unable to compensate for any further encroachment on his breathing surface. In other words, if his vital capacity is so low that it practically equals his tidal air, any further interference with respiration, even if very slight, will almost surely result in death from asphyxia.

These considerations have a very important bearing on the treatment of empyema particularly, and also on thoracic surgery in general. In acute empyema, especially of the streptococcus type, one of the striking clinical features during the early stages is a marked dyspnea and cyanosis. In other words, these patients are already having so much difficulty in obtaining enough air to maintain life that their vital capacities approach their tidal air requirements. Obviously, therefore, their abilities to compensate for any further encroachment on their breathing surfaces will be exceedingly limited. For this reason alone, therefore, the addition of any factor likely to embarrass respira-

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1. Hutchinson, John: On the Capacity of the Lungs and on the Respiratory Functions, Med. Chir. Tr., London **29**: 137, 1846.

2. Peabody, F. W., and Wentworth, J. A.: The Vital Capacity of the Lungs and Its Relation to Dyspnea, Arch. Int. Med. **20**: 443 (Sept.) 1917.

3. Dreyer, G.: The Normal Vital Capacity in Man and Its Relation to the Size of the Body, Lancet **2**: 227 (Aug. 9) 1919.

tion still more, as the creation of an open pneumothorax to establish drainage, should be carefully avoided. There has been a commonly expressed feeling, however, that, because in some cases the exudate is large in amount, the lung on that side is already "collapsed," and that the creation of an open pneumothorax will cause little if any further harm. This feeling exists largely because of the prevalent conceptions that the mediastinum constitutes a more or less rigid partition between the two pleural cavities so that it is possible for one lung to be completely collapsed with maintenance of respiration only with the other lung.

It is possible, however, to show by direct experiment the incorrectness of the prevalent conceptions of the mechanism of open pneumothorax. During the summer of 1918, the writer,[4] in conjunction with R. D. Bell, while we were members of the Empyema Commission appointed by the Surgeon General, carried out experiments which seem to have an important bearing on this whole question. For the details the original article should be consulted. Briefly, these experiments showed that, contrary to the usual belief, the normal thorax from the standpoint of pressure relationships is practically one cavity instead of two. The normal mediastinum, in reality, offers so little resistance to changes in pressure that any alteration in pressure in one pleural cavity is accompanied by an alteration of practically the same amount in the other pleural cavity. For example, if air is forced into one pleural cavity in even so small an amount that a pressure is established equivalent to that exerted by a column of water only 10 cm. high, the pressure in the opposite pleural cavity will vary between that of 9 cm. and 9.5 cm. of water. In other words, the resistance offered by the mediastinum to even so slight a change of pressure is equivalent to that exerted by only 1 cm. or 0.5 cm. of water (0.4 mm. or 0.8 mm. of mercury); and it is therefore negligible. There is no noticeable difference in this respect between the dog and the human being, and therefore experiments on intrapleural pressures conducted on the dog are directly applicable to man. It would seem to follow from this that the two lungs must be about equally compressed if the pressure in one pleural cavity is altered. Direct experiment again demonstrates that this conclusion is correct, for determinations of the relative densities (and therefore the relative degrees of compression) of the two lungs when one pleural cavity contains air at a pressure equivalent to 10 cm. of water are practically equal.

In the living dog, the type of response which occurs after the creation of an open pneumothorax is usually somewhat as follows: Immediately on the making of a moderately large pleural opening there is an increase of pressure to practically the same extent in the two pleural cavities. Whereas, before the opening is made both the inspiratory and expiratory pressures are entirely negative, immediately afterward the pressure rises so much that it is almost entirely positive; the indicators descend below the base line of atmospheric pressure only near the end of the inspiratory act. These changes are also coincidental with an effort on the part of the respiratory mechanism to compensate by making a greater effort to get air into the lungs, and accordingly there is a marked change in the respiratory movement. Usually this change is rather an increase in amplitude than an increase in rate. If the pleural opening is small enough to allow compensation, the intrapleural pressures will gradually diminish so that negative pressure will be reestablished. The negative pressure, however, is never restored so completely as to reach the level at which it was before the opening was made, provided the opening remains in communication with one pleural cavity. Instead of both the inspiratory and expiratory intrapleural pressures being negative, as in the normal state, the pressure at the height of expiration will be positive. The ability, therefore, to withstand an open pneumothorax is dependent on the ability to compensate by increasing the respiratory effort. If the opening is made sufficiently large, the animal will pass through a state of marked dyspnea and die of asphyxia within a few minutes, owing to his inability to compensate, no matter how great his respiratory effort; for if the opening is so large that, despite his maximal respiratory efforts, he is unable to establish a negative pressure in the pleural cavity, he will be unable to get air into his lungs; or if he is able to establish a slight negative pressure, he may be able to get a little air into his lungs, but not enough to maintain life.

The degree of asphyxia which will follow the creation of an open pneumothorax in a normal chest will therefore depend to a considerable extent on the ratio of the amount of air which enters the thoracic opening to the amount which enters the lungs at each inspiration. It is possible to show this relationship by means of the following mathematical expression, in which, as will be seen, the vital capacity is an important factor:

$$X = \frac{V - \frac{R_1}{R_2} T}{\frac{R_1}{R_2} T} aC$$

$V$, vital capacity.
$R_1$, rate of respiration before the opening is made.
$R_2$, rate of respiration after the opening is made.
$T$, tidal air (approximately 500 c.c.).
$a$, a factor less than 1 (assumed to be 0.8).
$C$, area of the glottis (about 2.25 sq.cm.).

If in substituting numerical values in the equation we insert 4,800 for $V$ (the normal vital capacity of men with a height of from 5 feet, 8½ inches to 6 feet, according to Peabody and Wentworth[2]), 15 for $R_1$ (an average rate of respiration during complete rest) and 60 for $R_2$ (an estimated maximum rate for the greatest possible depth of respiration), then

$$X = \frac{4{,}800 - 125}{125} aC = 37.4 \times 1.8, \text{ or}$$

$X = 67.32$ sq.cm., or 10.4 sq. inches.

In other words, therefore, a normal man of from 5 feet, 8½ inches to 6 feet in height theoretically should be able to withstand a thoracic opening of about 67 sq.cm., or 10 square inches, for as long a time as his respiratory muscles are able to maintain a maximum effort. This theoretical value harmonizes fairly closely with the findings during the war that wounds of the chest which were often of surprising magnitude did not necessarily result in death from asphyxia. Actually, of course, during operative procedures on the chest, openings which are apparently very large are in reality much smaller because of the presence in the incision of a lung that has been delivered out, gauze packs, the fingers of the operator, instruments, etc., all of which tend to plug the opening somewhat and thus reduce its size.

On the other hand, it is readily apparent that if the vital capacity is smaller or larger than the value used

4. Graham, E. A., and Bell, R. D.: Open Pneumothorax: Its Relation to the Treatment of Empyema, Am. J. M. Sc. **156**: 839 (Dec.) 1918.

in the example given above, the maximum nonfatal opening will also be smaller or larger, respectively. During the acute pneumonic stage of an empyema the vital capacity is always low. I do not know of any actual observations on the vital capacity during a severe acute pneumonia, but it is obvious that if, in spite of a maximal respiratory effort, air hunger and extreme cyanosis persist, the vital capacity must be nearly as low as the tidal air requirement. It will follow also from the theoretical considerations already given that when such a condition is present, any opening, no matter how small, is likely to result in a fatal asphyxia. Recently a striking confirmation of the validity of the mathematical expression occurred.

A young man who gave a history of having had pneumonia in the early part of February, and in whom pus had been found by aspiration, March 4, was admitted to the hospital March 7. An aspiration which was performed then resulted in the withdrawal of about 300 c.c. of moderately thick pus which contained hemolytic streptococci. A question as to the existence of an active pneumonia induced us to postpone the operation for a few days. March 12, immediately before the operation, the vital capacity reading was 1,600 c.c. and the tidal air, 400 c.c. It was felt that by this time sufficiently firm adhesions would be present to circumscribe the abscess and to prevent a general pneumothorax on that side. A resection of the eighth rib in the right posterior axillary line was made under nitrous oxid and oxygen anesthesia, and 400 c.c. of pus escaped. Immediately after the escape of the pus an alarming dyspnea with labored breathing occurred which was promptly improved by plugging the opening. On releasing the plug of gauze the dyspnea recurred; and it was again improved by applying a firm pad of dressings over the opening after a large drainage tube and a Carrel tube had been hurriedly inserted into the wound. Although the dyspnea was improved after the opening had been covered, it persisted to an uncomfortable degree for several hours. On the second day a tracing of the wound was taken and its area was computed by means of an Amsler planimeter, which revealed an area of about 2.1 square inches. A computation of the maximum nonfatal opening which this man could have on the basis of his vital capacity of only 1,600 c.c. gave a value of 3.3. square inches. If stabilizing adhesions were not present, therefore, the operative opening of 2.1 square inches allowed him a margin of safety of only 1.2 square inches, and it is not surprising that severe dyspnea resulted. As further evidence that firm adhesions were not present at the time of operation is the fact that one week later the cavity measured 1,300 c.c., although at operation only 400 c.c. of pus escaped, an indication that probably the alarming dyspnea was the result of a more or less general pneumothorax.

If firm adhesions are present, however, or if the mediastinum has been made more or less rigid by induration from long-standing inflammation, as in the case of chronic empyema and in many cases of pulmonary tuberculosis, then a change of pressure in one pleural cavity may not affect the other pleural cavity to anything like the same degree as in a chest without adhesions.

The older prevalent conceptions of the mechanism of action of an open pneumothorax will not explain the phenomena which have just been discussed; for, on the basis of such conceptions, death from asphyxia would be impossible from a unilateral open pneumothorax. The worst that could happen would be collapse of the corresponding lung, and life could still be maintained by the other lung. Moreover, a bilateral open pneumothorax would always be practically immediately fatal. Direct experiment, however, shows that a bilateral open pneumothorax is not appreciably more dangerous than a unilateral one, provided the combined areas of the bilateral openings are not greater than that of the opening on the single side. Apparently the only explanation of such a finding is on the basis of the conceptions which have been developed above. The importance of the determination of the vital capacity as indicating approximately the maximum nonfatal opening of the chest wall in operative procedures which involve entering the pleural cavity is apparent. As has been already stated, however, the presence of adhesions and induration of the mediastinal pleura will diminish the danger by lessening the compressing effect on the opposite lung. Before establishing an open drainage in a case of empyema, it would seem to be a matter of prudence to calculate in advance the theoretical maximum nonfatal opening on the basis of a determination of the vital capacity. If adhesions are not well developed, this preliminary calculation may save lives by the avoidance of too large an opening. In our service this preliminary calculation is always made.

A reduction of the vital capacity in cases of empyema is apparently always to be expected. It is very difficult to obtain an accurate reading during the acute pneumonic stage, but in a recent series of nine cases of adults the average reading at the time of operation for the establishment of drainage was only 37 per cent. of what the normal should have been for those individuals based on the tables of Peabody and Wentworth of the normal vital capacities for people of different heights.

COURSE OF DIMINUTION OF CAVITY AND INCREASE OF VITAL CAPACITY

| Date | Capacity of Cavity C.c. | Vital Capacity C.c. | Tidal Air C.c. |
|---|---|---|---|
| February 24 | 260 | 1,250 | 300 |
| March 3 | 90 | 1,750 | 300 |
| March 28 | 60 | 1,950 | ... |
| April 17 | 25 | 2,300 | 300 |

The lowest reading at the time of operation was 27 per cent. of the normal, and the highest 62 per cent. Six of the cases showed a hemolytic streptococcus and three a hemolytic staphylococcus. Another case of actinomycotic empyema gave a vital capacity reading of 47 per cent. of the normal. It is interesting that the vital capacity shows only a very slight improvement, if any at all, during the first few days after the withdrawal of a considerable amount of exudate, an observation which has previously been made by Peabody and Wentworth. Slowly, however, as the cavity diminishes and as the patient's general condition improves the vital capacity increases. This increase, coincidental with a diminution in the size of the cavity, is illustrated in the following case:

A young woman who had pneumonia in January entered the hospital, February 15. She was dyspneic and cyanotic. A right pleural effusion was diagnosed, and an electrocardiograph tracing revealed a heart block which was diagnosed by Dr. Wilson as due probably to digitalis which the patient had been taking. An aspiration of the chest resulted in the withdrawal of 1,450 c.c. of thin purulent fluid which contained both hemolytic streptococci and staphylococci. By February 21 she had recovered from the heart block and was much less dyspneic and cyanotic. Her vital capacity was 1,000 c.c. An intercostal incision was made and 800 c.c. of pus removed. From then on the diminution of the cavity and the increase of the vital capacity were as given in the accompanying table.

She was discharged practically well, April 17, with a cavity of which the capacity was only 25 c.c. and with a vital capacity of 2,300 c.c., which represented a gain of from 36 per cent. of the normal vital capacity for a woman of her

height (5 feet, 4 inches) to one which was 82 per cent. She was treated continuously with surgical solution of chlorinated soda (Dakin's solution) from the time of the operation until the drain was removed, March 30, except for a period of a few days beginning about February 24 and ending March 1. The interruption was because of a small pulmonary fistula which developed but which healed spontaneously during the period of cessation of the irrigations. She also used "blowing bottles" beginning a few days after the operation.

Another use which we have made recently of the vital capacity is to show the permanent physiologic deformity which results from extensive thoracoplastic operations. These operations not only are accompanied by a high mortality, but they often fail in stopping the suppuration, the very purpose for which they were intended, even if the patient survives the operation. Moreover, in addition to the mutilating anatomic deformity, there is apparently a permanent diminution in the vital capacity. This permanent decrease in the vital capacity is a serious handicap to the patient because it means that if he ever acquires a condition which in itself lowers the vital capacity, his chances of recovery will be considerably decreased as compared with an individual who at the start had a normal vital capacity. Such conditions are, of course, pneumonia or any other pulmonary disease, an uncompensated heart lesion, etc. Obviously, therefore, these operations should be undertaken only as a very last resort. The excellent results which have been achieved in the army with even the chronic cases of empyema as a result of an intelligent and painstaking use of Dakin's solution indicate clearly that extensive thoracoplastic operations will be unnecessary in all but the most exceptional cases. The additional evidence that these operations impose a permanent physiologic handicap should act as a further deterring factor in the consideration of the use of these procedures. The effect of an operation of the type of the Estlander-Schede is shown in the following brief report of a case:

A trained nurse, aged 28, presented herself, April 8, because of a discharging fistula in the left side of the chest at about the level of the ninth rib in the midaxillary line. She had had pneumonia followed by empyema two years before. The empyema had been treated by a rib resection as the primary operation. Without the trial of irrigations of any kind she had been subjected to an Estlander-Schede operation only a few weeks after the primary operation. This had been followed by several minor procedures at various times during succeeding months, but she was never relieved of her purulent discharge from the chest. She had also practically never been free from fever, and she was about 40 pounds under weight. An examination disclosed the usual anatomic deformity from this type of operation due to an absence, in her case, of all the ribs on the left side from the third to the tenth. In addition, the fistulous tract was found to pass upward and inward for a distance of about 6 inches and to communicate directly with the lung so that irrigations were promptly coughed up into the mouth and tasted. Her vital capacity was only 1,500 c.c, which is only about one half of what it should be for a normal woman of her height (5 feet, 4½ inches). An operation was advised for the purpose of closing the pulmonary fistula, and this was carried out, April 10. The tract was dissected up, for a distance of about 6 inches, to where it entered the lung, ligated and cut off. The stump was then phenolated and inverted into the lung in a similar manner to the handling of an appendix stump. She has apparently been healed since April 15, and she has been entirely free from fever since April 13, the longest time she thinks since her original illness two years before. But despite the fact that she seems healed, her vital capacity is still only about one half of what it should be normally. In other words, she is probably permanently handicapped to such an extent that if she ever again gets pneumonia or any other condition which in itself lowers the vital capacity, she will have only about one-half as good a chance of recovery, other things being equal, as she would have if her vital capacity were normal. The final conclusion concerning the case, therefore, is that probably the mutilating operation was unnecessary in the first place, it has failed to prevent two years of invalidism and it has left her not only with a very bad anatomic deformity but also with a serious physiologic handicap which will probably be permanent.

### SUMMARY AND CONCLUSIONS

Determinations of the vital capacity by means of a spirometer, when used in connection with the mathematical expression given in the text, will indicate approximately the maximum opening in the chest wall compatible with life, if the mediastinum is not already stabilized by adhesions and induration. If such observations are made before establishing open drainage in cases of empyema or before any thoracic operation, doubtless many lives will be saved. Both theoretical conclusions and actual observations show that in empyema the vital capacity is greatly reduced. That this reduction does not depend merely on the presence of the fluid exudate in the pleural cavity is shown by the fact that an appreciable increase in the vital capacity occurs only gradually after the removal of the exudate. This fact is of importance in being an additional argument against the establishment of an open drainage during the acute pneumonic stage of an empyema when the vital capacity is so low as to approximate the tidal air requirement. Extensive thoracoplastic operations result in apparently a permanent marked reduction in the vital capacity. They should be employed, therefore, only in the rarest instances and only after other methods have been given an intelligent trial for at least many months.

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## RELATIVE VALUE OF VARIOUS OPERATIVE PROCEDURES EMPLOYED IN ACUTE EMPYEMA*

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During the last few years many articles on empyema have appeared in the literature, usually consisting of a report of a series of cases with advocacy of a certain method of treatment. The claim is advanced that the particular method advocated is superior to others, and statistics are submitted to substantiate this claim. Some of the articles can be classed as constructive, in that they help in the understanding of the disease and contribute something that will help us better to treat it, while others are merely fads that will be short lived. During this period there has been no contribution that has greatly modified our conception of either the pathogenesis of acute empyema or of the best routine treatment. The period has been marked rather by having certain facts, known before, emphasized and brought forward for discussion. The two most valuable points have been:

1. General recognition of the importance of an acute pneumothorax.

2. The systematic attempts at sterilization of the empyema cavity by means of chemical solutions.

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In studying the various empyema reports, one is impressed with the fact that in many of them comparison is made only on the basis of treatment and mortality rate. This is an incomplete and untrustworthy method, for every one who is familiar with the subject knows that cases differ considerably, and that other factors must be taken into consideration.

Empyema cases should be studied with regard to: (1) the antecedent disease; (2) the type of organism concerned and its virulence; (3) the prevailing climatic conditions; (4) whether cases are sporadic or those of an epidemic; (5) the treatment, and (6) the mortality rate.

That all these factors may play an important rôle was impressed on me in a two years' experience with empyema in various army camps, during which time I had the opportunity to follow several series of cases at different periods, and in different parts of the country, with ample facilities for the study of necropsy material.

In 1919, I reported [1] a series of seventy acute cases, from a Southern camp, with comments on the difference in cases depending on the antecedent disease and organism producing the infection. My article covered the early period of the war, and included the fulminant septic cases following measles. Our total mortality was 27 per cent. Fifty-four of the cases were of pneumococcal origin, with a mortality of 17 per cent., and sixteen of streptococcal origin, with a mortality of 62 per cent. On the basis of this one series, I naturally came to the conclusion that it was chiefly a question of the organism concerned.

Shortly after that, I had occasion to study a series of cases in a Western camp of which by far the larger number were streptococcus cases, with a total mortality of only 6 per cent. Part of this series is included in a report of the influenza and pneumonia epidemic from Camp Custer, compiled under the direction of Lieut.-Col. Ernest E. Irons, by Major Lynn S. Beals, Capt. Wyndham B. Blanton and Capt. John F. Bresnahan; it gives the interesting figures reproduced in Table 1.

TABLE 1.—ORGANISMS CONCERNED IN WESTERN CASES

| | | | Cases | Deaths |
|---|---|---|---|---|
| Sterile fluids | | | 25 | |
| Empyema: | | | | |
| Streptococcus hemolyticus | | 42 | | 3 |
| Streptococcus viridans | | 9 | | |
| Streptococcus undetermined | | 2 | | |
| | | 53 | | 1 |
| Pneumococcus Type I | 7 | | | |
| Pneumococcus Type II | 0 | | | |
| Pneumococcus Type III | 5 | | | |
| Pneumococcus Type IV | 5 | 17 | | |
| Thick pus, no bacteria | | 2 | 72 | |
| | | 72 | 97 | 4 |

What explanation for this can one offer? Had the treatment been different, one might attribute it to that; but it was exactly the same as that advocated and carried out in the latter part of the period covered by my paper, namely, repeated aspirations until the pneumonia had subsided and pus had formed, and then intercostal incision or rib resection.

One is compelled to assume that though the organism in these cases was also a hemolytic streptococcus, it was not the same virulent organism that caused the fulminant septic cases associated with measles in the winter of 1917-1918. Similar observations can no doubt be cited by other observers; they simply emphasize how misleading it is to draw definite conclusions from one group of cases.

In another series of twenty-nine cases, representing all the empyema cases of an influenza epidemic in a Southern camp, there was a mortality of eight, or 27.6 per cent. They are divided as in Table 2.

TABLE 2.—ORGANISMS CONCERNED IN SOUTHERN CASES

| | Cases | Deaths |
|---|---|---|
| Streptococcus hemolyticus | 10 | 4 |
| Pneumococcus Type I | 3 | 0 |
| Pneumococcus Type II | 2 | 0 |
| Pneumococcus Type III | 6 | 1 |
| Pneumococcus Type IV | 4 | 0 |
| Staphylococcus aureus | 4 | 3 |
| | 29 | 8 |

Necropsies, performed in six of the eight fatal cases, disclosed:

CASE 1.—*Streptococcus hemolyticus;* left, complete empyema; bilateral bronchopneumonia; suppurative pericarditis, and vegetative endocarditis.

CASE 2.—*Streptococcus hemolyticus* and pneumococcus Type I; bronchopnuemonia; purulent pericarditis, and bilateral empyema.

CASE 3.—*Streptococcus hemolyticus;* right empyema; purulent pericarditis; bronchopneumonia, and serofibrinous peritonitis.

CASE 4.—*Streptococcus hemolyticus:* left pyopneumothorax: an abscess of the right upper lobe; bilateral bronchopneumonia, and pericarditis.

CASE 5.—*Staphylococcus aureus;* bilateral empyema; pericarditis, and vegetative endocarditis.

CASE 6.—*Staphylococcus aureus;* left empyema; lobar pneumonia; fibrinous pleurisy, and pericarditis.

These findings demonstrate conclusively that probably no method of treatment known at present could have saved the patients. The cure for these septic cases is to be looked for, not from surgery, but from serum treatment.

In the one pneumococcus case that was fatal, no necropsy was obtained. The man had been extremely sick, and had had a bilateral pneumonia and empyema and a positive blood culture with Type III pneumococcus. His death was predicted by the medical service on the strength of laboratory findings, before an operation was performed.

The eighth patient who died, in one of the staphylococcus cases, was in a septic state with ear complications and acute dilatation of the stomach. Not one of the patients died of an uncomplicated empyema, and not only those who died but also many of those who recovered were extremely sick, and careful individual treatment alone made it possible to keep the mortality rate so low. To compare such a series with the type of empyema cases ordinarily encountered only on a treatment and mortality basis is manifestly not possible. We must recognize that there is a difference in cases, and that those of an epidemic are usually more virulent than sporadic cases.

## THE NATURE OF EMPYEMA

This leads to a consideration of what empyema really is. The general conception is that it is a collection of pus in the pleural cavity more or less encapsulated and usually following pneumonia. Had we in the army been confronted with this type alone, very little discussion would probably have arisen. But with

1. Eggers, Carl: Empyema: Analysis of Seventy Cases at Base Hospital, Camp Jackson, South Carolina, Surg., Gynec. & Obst. **28:** 343 (April) 1919.

the incidence of measles and influenza in our army camps, complicated with a severe bronchopneumonia bilateral in character and often associated with profuse exudation into the serous cavities, a clinical picture was presented that was unfamiliar to many of the surgeons who were suddenly called on to treat large numbers of these patients.

On the theory that all infected fluid in the thorax was a potential empyema, prompt operation was resorted to, with unfortunate results in many instances. Various attempts to reduce the mortality followed. It was chiefly in two directions that a remedy was sought:

1. One group of operators who considered the presence of any infected fluid within the thorax an empyema, and who thought its immediate removal of primary importance regardless of the stage of the pneumonia, developed a technic that would give drainage and at the same time prevent an acute pneumothorax.

2. The other group, led by experience to the conviction that in the majority of cases the fluid present in the course of a pneumonia, even if infected, was not of primary importance, delayed operation until the pneumonia had subsided and adhesions formed to wall off the fluid, and in the meantime resorted to aspirations.

In the group of seventy cases mentioned before, I made various observations. One was that empyema following a primary lobar pneumonia was likely to be different from empyema following a bronchopneumonia secondary to some other acute infectious disease, such as measles or influenza. Another observation was that empyema of pneumococcal origin was different from the early streptococcus empyema. The inflammation of the pleura associated with a pneumococcus lobar pneumonia is usually limited to the involved lobe. It is due to direct extension of the infectious exudative process in the lung to the overlying pleura. There is no rupture of a subpleural abscess; as a matter of fact, no abscess formation takes place in the lung. The pneumonia has usually subsided when the empyema becomes fully developed, and complete restitution of the lung to normal takes place. The pleural exudate early consists of thick pus well encapsulated.

If, on the other hand, we deal with a streptococcus or staphylococcus infection, we usually find a bronchopneumonia bilateral in character and frequently associated with multiple abscess formation in the lungs. Wherever a patch of pneumonia appears close to the surface, the overlying pleura may become involved. A profuse serous exudation develops and this extensive exudate may become infected.

Occasionally a small subpleural abscess may rupture and be responsible for the empyema, but this is probably the exception instead of the rule. At times we have incontrovertible evidence that such a rupture has occurred and that is in the cases of pyopneumothorax. Some of the patients that take the Dakin treatment poorly may also belong to this class, but the total of such cases is small—certainly not sufficient to warrant the statement that all empyema cases are due to rupture of a subpleural abscess. The latter would not explain the appearance of a suppurative inflammation in the pericardium or the peritoneum that occasionally are coincident with the pneumonia and the empyema. The fact that a clear serous exudate containing streptococci often exists for days would speak against rupture of an abscess. Had an abscess ruptured, the fluid would at once take on the characteristics of pus, as it does in patients with a pyopneumothorax.

We have to consider these cases as general streptococcus or staphylococcus infections, with localization in the lungs and serous membranes. The many suppurative complications in other parts of the body would substantiate this view. The pneumonia in these cases often runs a long course, affecting one part of the lung after another, and the fluid may remain serous for some time before it changes to actual pus.

### METHODS OF TREATMENT

*Aspiration.*—When speaking of the treatment of acute empyema by repeated aspirations, one does not intend continuing aspirations until a cure results or even "as long as possible." A fixed objective is followed, namely, to rid the body of an infected fluid early in the course of pneumonia until the process in the lungs has subsided and the fluid been walled off. As soon as this stage is reached, an operation should be performed. Aspiration is a simple procedure, and the best apparatus to be employed is the Potain aspirator. The needle should be introduced to just within the thoracic cavity, to avoid injuring the lung. All the fluid may be removed, or just enough of it to give relief from respiratory distress, depending on the case. With proper technic, the introduction of air is effectively prevented. Aspiration gives great relief in acute cases, and should be freely employed until a patient is ready for operation. As a curative measure it is of little value, for we are dealing with an inflamed, infected pleural membrane that will continue to secrete. Occasionally, however, a cure does result, as several authors have reported. I have had under treatment two cases, one with a streptococcus, the other with a pneumococcus culture, that cleared up after one complete aspiration.

*Open Methods.*—The two paths available are the intercostal incision or the resection of a portion of a rib. In either event a drainage tube is inserted and the pus given free exit. These are the oldest methods in use, and in the past they have given satisfactory results. Have they failed in their usefulness since empyema has attracted so much attention? They certainly give good and ample drainage, which is continuous and easily maintained. The operation may be performed under local anesthesia, either at a hospital or at home. Little or no embarrassment of respiration results; on the contrary, breathing becomes easier, with free drainage of the infected material and subsequent diminished absorption. Drainage can be instituted wherever it is demanded, i. e., wherever the pus is found. The patient may be out of bed as soon as his general condition permits, and his position in bed may be changed as desired and as is compatible with his comfort.

No special appliance or apparatus is required, for a drainage tube is easily procured or improvised, and altogether the operation is so simple that many a life has been saved by a practical physician who, at the right time, instituted open drainage.

The after-treatment is usually very simple, and an assistant or nurse may be entrusted with it. If irrigation, or especially if Carrel-Dakin treatment is used, more care is required, for the details of treatment must be carried out as advocated. With an empyema drained at the proper place, early healing is favored by keeping the cavity empty, sterilizing it, and preventing damming back of pus. The lung will gradually

expand, the formation of a thick disabling pleura will be prevented, and as a result the danger of recurrence is minimized.

What, then, is the objection to the operation? Does it invite complications, or does it not effectively avoid dangers? In the ordinary empyema cases, in which the pneumonia has subsided and the fluid become pus, there is no danger connected with the operation if ordinary surgical principles are observed. No special skill is required to make an intercostal incision or to resect a small piece of rib under local anesthesia.

All steps are performed under guidance of the eye, bleeding is easily controlled, pus and fibrin clots can be evacuated, and drainage can then be instituted. An acute pneumothorax does not result because the pus has become walled off before the operation is performed.

*Closed Methods.*—These may be divided into two main groups: (*a*) intermittent and (*b*) continuous closed drainage. In each group there are numerous subdivisions based on special appliances or procedures advocated by individual authors. Though these methods have been used for years, they have never been universally adopted as routine operations. The reason for this is that they have failed in certain important respects, the chief of which are inadequate drainage and inability to dispose of large fibrin clots. Cumbersomeness and easy derangement of apparatus are other objections raised to it, but all of them have been and can be successfully met in a case in which the method is really indicated.

Perhaps the chief argument against the general adoption of closed drainage is that it is unnecessary, and that it often delays rather than favors early healing. Some of the closed methods are easily applied; others are more difficult and require special skill. Practically all of them necessitate the use of some special appliance or special treatment to be effective.

The after-treatment needs constant supervision by one familiar with all the details, and who understands and values the importance of an acute pneumothorax. An error in technic may negative all that the treatment was instituted to prevent.

Some of the advocates of closed drainage state that it is of minor importance where the puncture is made, as long as the tube enters the cavity. It is claimed that suction will remove all secretions effectively. Such teaching is misleading, because in the upright position sacculation of pus may occur. Healing will often be delayed because drainage is not free and secondary accumulations of pus are more likely.

We have observed that a chronic pneumothorax may result in spite of the treatment, and that an already existing pneumothorax is not obliterated by the application of negative pressure.

It appears that with a trocar stab a lung puncture results more often than with other methods. One author reports bronchial communication in ten cases in a series of thirty-two. This is much more frequent than ordinarily encountered.

There is one method of treatment I want to refer to particularly, namely, the injection of formaldehyd glycerin into the cavity after aspiration. The injection of this fluid inhibits the growth of bacteria, but it forms a more or less complete cast of the cavity and gives rise to a very thick abscess wall which is quite disabling. Though the organisms do not grow on culture, they constitute a menace to the patient, and he is more or less invalided. Twenty-one cases of this character came under my treatment at one time, and it was necessary to perform a secondary operation in seventeen of them. In several of these, simple open drainage, followed by Dakin treatment, was sufficient to bring about a cure, while in the others a radical operation had to be performed.

Bearing in mind the advantages and disadvantages of closed drainage, one may use it in properly selected cases. Excellent results have been reported by a number of authors.

Closed drainage finds its greatest application in those septic cases in which, early in a pneumonia, the presence of the fluid itself is considered a meance to the patient. It is here used to bridge over the critical period until the pneumonia has subsided and adhesions have formed. A secondary drainage operation may be performed later. Closed drainage is also invaluable in cases with a double empyema and in patients with a pyopneumothorax.

## STUDY OF CHRONIC CASES AND WHAT THEY HAVE TAUGHT

The causes of chronic empyema cavity may be classed as (*a*) avoidable and (*b*) unavoidable. We need not discuss the unavoidable causes, because the treatment of acute empyema has no bearing on them. Of the avoidable causes the most common is inadequate drainage through a narrow sinus, allowing damming back of pus, repeated reinfection of the cavity, and the development of a thick, unyielding pleura.

The next most frequent cause is an improperly placed drainage opening, one not at the dependent part of the cavity.

Another common cause is too early operation, allowing the lung to collapse at a time when no adhesions or only a few have formed.

All these causes argue for delay in operating until the pneumonia has subsided and the fluid has been walled off. Once this stage has been reached good drainage should be established, usually at the classical site, and Dakin-Carrel treatment then instituted.

## SUGGESTED TREATMENT

There exists at present some confusion regarding the best routine method of procedure in acute empyema. The proper treatment of empyema, in all its phases, requires a knowledge and an appreciation of the physiology of normal respiration and also of the variations in the presence of disease. No one method will always give uniformly good results, and no attempt should be made to make a case fit a given method of treatment. On the contrary, that treatment which will most likely restore the patient to health in the shortest time should be adopted in each case. Individualization is the keynote of the successful treatment of empyema, and clinical experience and observations made at the necropsy table must guide us in the right direction. From these observations we have learned that there is such a thing as a common type of empyema, following pneumococcus pneumonia, in which the pus collects in the lower part of the chest. It becomes walled off early and the costopleural angle becomes obliterated by adhesion of the diaphragm to the chest wall. Intercostal incision in the eighth or ninth space or the resection of a portion of the eighth or ninth rib will place the drainage at the dependent part of the cavity.

Simple open drainage or the addition of irrigations, preferably with surgical solution of chlorinated soda

(Dakin solution), constitutes the after-treatment. By far the larger number of all empyema cases conform to this type.

Taking this as a basis, one may modify the treatment as indicated in a given case. If there is an unusually large amount of fluid, as is so often found in the septic streptococcus or staphylococcus cases, and it is considered that the presence and absorption of this fluid itself, regardless of the stage of the pneumonia, is dangerous to the patient, one of two courses may be followed.

1. The fluid may be aspirated, and this may be repeated as often as the thorax refills, until the pneumonia has subsided. Coincident with resolution, the fluid has usually become pus and has become walled off. A simple drainage opening may then be made, as advocated above, and the case treated the same as a pneumococcus empyema.

2. If more urgent treatment is demanded, one may make a small intercostal incision, introduce a drainage tube, close the tissues around it, and then lead the tube into a partly filled bottle under the bed. This gives a closed method of drainage. A Brewer tube may be used for this purpose, or an ordinary rubber tube sutured to the edges of the wound. Good drainage with little respiratory disturbance will be obtained. The tube fits snugly for from five to seven days, and at the end of that time the treatment can safely be converted into an open one, because by that time sufficient adhesions will have formed to prevent a pneumothorax.

Occasionally the bottle system of drainage with negative pressure, as advocated by the Empyema Commission, can be used to advantage. It permits the introduction of Dakin's solution, with flushing of the cavity while drainage is going on. However, suction should not be employed while the inflammation in the lung is active. It will not draw out a lung filled with inflammatory exudate, and if it could, it would be harmful. An inflamed organ should be put at rest. To employ suction after the inflammation has subsided is unnecessary, for the secret of healing is not suction but sterility. This sterility is best obtained by open drainage, perhaps favored by irrigation with antiseptic solutions. I believe that the only safe healing for an empyema is by obliteration of the cavity. The two opposing layers should adhere, and they will adhere just as soon as the surfaces are sterile. For this reason I believe the catheter method of drainage as a routine method, advocated by several authors, is not going to prove satisfactory. Stab wounds of abscesses with subsequent cupping by means of Bier cups, at one time so much lauded, has been given up for the same reason, that it also affords inadequate drainage. When pus is present we must follow the oldest rule in surgery and give it free exit.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. GRAHAM AND EGGERS

DR. ALEXANDER LAMBERT, New York: A physician cannot discuss with surgeons the wisdom of proceeding with this or that mechanical method of empyema. He could discuss very pertinently the wisdom of getting house staffs together and seeing that empyema cases in the medical ward are quickly reported to the visiting surgeon and not to the house surgeon. That will do more good to save these patients than anything I have yet found. Empyema is not, as a rule, a sequel of pneumonia; it is a complication appearing, as a rule, on the fourth or fifth day. Bronchopneumonias are not always streptococcal in character. They vary in pathogenesis and in the kind of germ causing them. One great difficulty has been well pointed out by Dr. Eggers, and that is, that the pneumonia causes more deaths in the early stages of empyema than does the empyema, because it prevents recourse to surgery. The pneumonia must subside before it is safe to operate, and the old idea whether the pus is laudable or damnable makes no difference. It is a question of the activity of the pneumonia. Moreover, in the present influenza, there is as much danger from minute abscesses of the lung as from empyema. I think I lost six or eight patients from multiple abscesses scattered over both lungs. In cases of one large abscess of the lung we succeeded in saving 60 per cent. of our patients. Moreover, an important question which few think of in connection with the physiology of the lack of breathing space is that when the lung starts to collapse it does not collapse straight up from base to apex. After the lower part is collapsed it holds by the root and swings so that an entire collapse of the lung is against the mediastinum. This is not usually realized. In all cases of complete collapse of the lung, a sausage-shaped lung is lying against the mediastinum. Surgeons should teach that inserting a trocar into a lung cavity in pleurisy is a trauma and more liable than anything else to produce empyema; to do aspirations in the early stages of pneumonia, and to refer the patient to the surgeon as soon as the pneumonia has subsided. Next to pneumonia, the most frequent cause of empyema is from the traumatism done by a dirty needle.

DR. MARTIN B. TINKER, Ithaca, N. Y.: Attention has been called to the slight progress which has been made in the treatment of pleurisy and infectious effusions from the time of Hippocrates until the time of the great war. We have accumulated a great deal of valuable experience and it is highly important that we should get the lessons of this experience thoroughly. It was demonstrated abundantly that early operation in empyema and purulent effusions produced a large number of deaths. At first we resected a rib and evacuated the pus in all cases. The death rate was so high that we realized we must resort to some other method. We aspirated until in many cases the fluid became so thick it would not come through the canula. Then we diluted the pus with salt solution and finally when it became too thick to aspirate, we resected the rib. The mortality was reduced from over 60 per cent. to 22 per cent. In these cases the antecedent infection is of great importance. No doubt the empyema due to the pneumococcus should be handled differently from empyemas due to the streptococcus, especially the hemolytic streptococcus. Dr. Eggers called attention to the fact that in many cases pleura, peritoneum and pericardium were affected, and with such multiple infection of serous cavities it is hardly to be expected that the patients will recover by any means of treatment. Aspiration and cannula treatment is not always successful. I believe that the use of the cannula and aspiration will cure a considerable percentage of cases, but as Dr. Eggers emphasized, it is going to be necessary to resect a rib and drain in many cases. There is nothing gained in most of these cases in taking out more than one rib. If one rib is resected and the cavity is thoroughly sterilized by surgical solution of chlorinated soda the majority of patients will recover without any more extensive operation. Extensive thoracoplastic operations are unnecessary, except in very unusual cases. Dr. George R. Fowler, of Brooklyn, called attention to decortication of the lung as a means of handling these chronic empyema cases five years before Delorme did so.

DR. ARVINE E. MOZINGO, Indianapolis: The open thoracotomy has high mortality, inertia of custom and prestige of surgical tradition. I developed an improved technic for a closed method and had but two deaths in 138 cases, 45 acute and 93 chronic. The operation is simple and success depends largely on after-treatment. One author recently reported a series of 410 cases with forty-eight deaths following open operation, and 100 deaths in cases he considered unsuitable risks for any operation other than aspiration. While repeated aspirations are no doubt advisable before the open operation is done, aspiration is very unnecessary with the closed method.

The statement made by Dr. Eggers that the twenty-one transfers were aspiration cases treated with formaldehyd-glycerin is not correct. Thirteen patients had been operated on overseas by the open method, one by Phillip's, four by Diederich's and three by my method. One of my patients was permanently healed, one had been operated on but two weeks previously and the other was a bilateral case with persistent bronchial fistula.

DR. JAMES F. MITCHELL, Washington, D. C.: Controversy between the open and closed methods of treating empyema is unnecessary. Both methods are good, each in its place, and we should learn to think of empyema not as a single condition to which all our attention should be devoted, but as only part of a more general condition. In this way we can, as Dr. Eggers suggested, select the treatment according to the stage of the condition. We are now getting together an enormous amount of material through the surgeon general's department of the army, which will afford enlightenment on the whole subject of empyema. Dr. Edward K. Dunham, of New York, is tabulating the complete records of 4,000 cases treated in the Army epidemic, and this brings out some very interesting facts. Dr. Dunham sums the thing up in a sentence. In a letter to me he says: "Two points, however, are very simple: (1) that in fatal cases there are associated foci of infection within the thorax and in other parts that in themselves are so serious that they menace life; (2) that there is a critical period in these severe cases that lasts several days—say, up to three weeks—during which the single empyema is of relatively small account, succeeded by a period in which that empyema becomes the main problem for treatment." The lessons are: In the first period, save life (if you can); in the second period, reduce the period of convalescence and minimize the final disability. "On these two commandments hang all the laws and *profits*." The experience of the Empyema Commission verifies practically what Dr. Eggers said that you must select a time for operation and fit the operation to the time and carry out the commandments of Major Dunham; in the first few days save life, later reduce the period of convalescence and minimize deformity.

DR. MOSES BEHREND, Philadelphia: The bacteriologic control of these cases is probably the most important point brought out. In all cases of *Streptococcus hemolyticus* infection, no extensive operation should be performed. A simple aspiration should be done until the acute symptoms subside. In all streptococcus, staphylococcus and pneumococcus infections, when pus has formed, the sooner we get it out the better and the best operation is rib resection. A great deal of harm has been done by these other operations, such as thoracotomy, introduction of trocar or cannula and simple drainage tubes. I do not think they have any place in the treatment of this disease when pus has once formed and acute symptoms have subsided. Dr. Eggers has brought out well that the only way to remove pus from any part of the body is by drainage, and the only proper way to treat an empyema is by excision of ribs.

DR. C. D. LOCKWOOD, Pasadena, Calif.: I have had no experience on the experimental side of chest surgery, but I have had considerable experience in traumatic surgery in front line hospitals. Practically, we seldom met with the condition Dr. Graham speaks of, i. e., extreme asphyxia, even when we produced a large pneumothorax. The most important lesson gained from our experience in the Army is that we can apply the same principles in surgery of the chest that we do to other portions of the body in civil life. At Brest I saw many of the early cases of influenza contracted during transit. We soon learned that these patients died if drainage was done early. We used early aspiration and injected 2 per cent. liquor formaldehydi in glycerin even before the recommendation of the Empyema Commission in this country. I agree with Dr. Eggers that we cannot determine the value of any method of treatment in a single series of cases. Each case is a law unto itself. Another important factor has not been mentioned in this discussion—the routine use of the roentgen ray in connection with drainage of the pleural cavity.

DR. GEORGE J. HEUER, Baltimore: Owing to Dr. Graham's failure to be more explicit in his statements, there has arisen some confusion as to the practical application of his work in intrathoracic surgery. In conversation with surgeons interested in thoracic surgery I have heard it stated that Dr. Graham's work is a positive proof of the necessity of pressure anesthesia in operations on the thorax because the operative opening in the thorax is greater than that found by Dr. Graham to be compatible with life. It was our experience abroad in treating wounds of the thorax that the chest may be opened very widely without causing respiratory upsets; and that regardless of the intrathoracic pressure relationships or the degree of collapse of the lung in the opened and unopened sides, respiration was sufficient for the patient during the period of an operation if the lung on the unopened side was normal. Obviously, the best way to treat chronic empyema is to prevent its occurrence. Our experience has shown that if we keep patients in the hospital a little longer we can effect a cure in every case of acute empyema. When, however, patients come to the hospital with chronic empyema, we should rather direct our efforts to sterilizing the cavity than to obliterating it by rib resections. In our experience with twenty-four cases of chronic empyema, these sterile intrapleural cavities have remained unobliterated for a variable time after the operative or spontaneous closure of the sinus tracts, but eventually have been spontaneously obliterated. In no instance has the unobliterated intrapleural cavity been an inconvenience to the patient. We can, therefore, disregard the cavity if we can sterilize it; and our efforts should primarily be directed toward the sterilization of chronic empyemic cavities.

DR. CARL A. HEDBLOM, ROCHESTER, Minn.: During the last two years we have treated 150 cases of chronic empyema at the Mayo Clinic. Dr. Eggers pointed out very rightly that the treatment of acute empyema should be adapted to the patient, and that the particular operation the surgeon favors should not be used regardless of the special features of the case. Forty-two of our patients were cured or materially improved by simple drainage. In fifty-one cases, cavities were obliterated or nearly so by irrigation with surgical solution of chlorinated soda. Some of these were instances of practically complete collapse of the lung. There remained a group of cases of relatively long duration, in which neither rib resection for efficient drainage nor the irrigation sufficed. In thirty such cases a decortication was done, after preliminary sterilization. There remained twenty-seven cases in which it was necessary as a last resort to do a plastic operation, involving sacrificing a considerable portion of the chest wall. Dr. Graham mentioned one of the chief objections to an extensive plastic operation on the chest wall—namely, the greatly lowered vital capacity that may result. The main object should be to get the patient well, without avoidable loss of function. In my opinion, an avoidable mutilating operation, involving a considerably increased mortality is not justifiable for the sake of shortening convalescence. If every other means has failed, then radical destructive operation may be advisable. There were four deaths in this series of 150 cases.

DR. H. M. RICHTER, Chicago: Dr. Graham made a serious error in comparing the respiratory movement of the dog with that of the human being. The transverse diameter of the chest of the human being is twice that of the anteroposterior diameter. The dog's is only half as much. The area of the diaphragm as compared with the transverse diameter of the two chests is tremendously different. The lateral motion of the median septum of the human chest—which is trifling compared with the capacity of each side of the chest—as compared with the lateral motion of the median septum of the dog's chest, is such that when one opens the dog's chest one immediately reduces tremendously the vital capacity, but when one opens one side of the human chest one diminishes the capacity to but a trifling degree. I think it is because of this that the modern transthoracic operations have been so much more successful than in former days, for instead of a small intercostal incision one is made that enables one adequately to explore and to do what should be done. We have been so long taught to drain pus where we find it, to make free incision for pus that needs drainage, that we forget that the pleura is not a large cavity. It is a trifling cavity. When

the two layers of the pleura are in contact we have nothing but a capillary space which holds but a centimeter of fluid. In empyema we convert that trifling space into a tremendous space. We are at first impelled to make free incision to drain that large cavity. The fact is that any means which tends to bring the lung out to the chest wall immediately converts that large cavity of the empyema into the small normal cavity of the pleura and then there is need for only trifling drainage. I do not refer to the many exceptions to the rule, such as the old rigid lung that cannot be brought out, or masses of fibrin that cannot come through a small tube. The logical thing is to carry out such a method of suction treatment as will quickly bring together the two layers of the pleura.

DR. T. TURNER THOMAS, Philadelphia: Dr. Eggers said first that the drainage opening should be in the dependent position, and, then, that it should be in the eighth or ninth interspace. He said also that the costophrenic sinus in these cases was obliterated by adhesions. I have been emphasizing during the last eight or ten years a method used years ago by the elder Ashhurst. This consists essentially in the introduction of a grooved director curved at the end; or a similar instrument, such as a urethral sound, at a safe level, i. e., high enough, where we know we shall find pus and not injure the diaphragm. The tip of this exploring instrument is then turned downward to the bottom of the empyemic cavity, where it can easily be felt through an intercostal space, and an opening then safely made on it at the bottom of the pus cavity. A piece of the rib just above may then be excised or not, as desired, a good sized rubber tube being inserted for drainage. I have thus placed the opening usually in the eleventh interspace. I have placed my finger at the bottom of the costophrenic sinus in almost, if not every, case and have found it not obliterated by adhesions, but widely distended by the pus. It has proved to be a very simple and safe operation requiring not more than four or five minutes after the first exploratory opening is made. Sometimes the lowest part of the empyema will be in the tenth interspace, much more often in the eleventh, but always at the bottom of the cavity.

DR. ROSALIE SLAUGHTER MORTON, New York: A point not emphasized is the relative effects of gas gangrene following chest wounds and those of other parts of the body. It is never so serious, either from the standpoint of pain or of fatality, in the chest as where muscular tissue which is confined is wounded, as, for instance, in the bottle shaped wounds of the leg and thigh the result of necrosis of muscle fiber due to the pressure of gas which formed there quickly and caused a rapidly resulting septicemia. The pressure caused a great deal of pain. Ripping these wounds open was the first step in their treatment. As the chest wounds were usually gaping, the pressure effects were not serious, and mortality was little increased by this complication, whereas in small wounds of the leg the mortality was high.

DR. JOHN B. HAEBERLIN, Chicago: In reference to the technic of advanced empyemas or neglected empyemas, those that are seen late, the object is to drain the chest cavity with the minimum amount of shock or reaction to the patient. Whenever possible do a rib resection. Get the pus out without unnecessary manipulation. If you place a sterile piece of gutta percha, 10 by 10 inches, over the chest immediately after the operation is completed, you will find that with each positive phase the empyema sac will drain itself and the gutta percha will hold the air that wants to be aspirated, so in that way we are able in extreme cases to do our work quickly and accurately and yet avoid the annoyance and irritation of drainage tube and gauze. The patient will be extremely comfortable after being put to bed. Redressings are not painful. Dress for from six to nine days until you want to use tube or gauze. The change is made by applying sterile oil and slipping out the gutta percha with a fresh piece lying over it.

DR. EVARTS A. GRAHAM, St. Louis: As to whether a positive or negative pressure apparatus is absolutely essential in the performance of intrathoracic operations, I do not think so. The work of which I have spoken has shown clearly that there is no definite physiologic necessity for using intratracheal insufflation or any cumbersome negative pressure apparatus, at least in the majority of cases which demand intrathoracic operations. If the man of average vital capacity can withstand a free opening in his chest wall of ten square inches, it is clear that for such a case no artificial means of maintaining respiration will be required during the operation. For as a matter of fact, it is very seldom necessary to maintain a free operative opening of so great an area, and usually the operative opening is actually much less than it seems to be because of the presence in the incision of fingers of the operator and his assistants, gauze pads and sponges, instruments and frequently a lung which has been delivered, all factors which tend to reduce very markedly the actual free area for the admission of air into the pleural cavity. It should be emphasized again, however, that there are conditions in which the vital capacity is so reduced, as, for example, in pneumonia, that compensation cannot be made for an opening of any size. I cannot see the importance of the shape of the chest, and I cannot understand how it could make any difference whether the chest is cuboidal, spherical, or polyhedral, or what the anteroposterior diameter happened to be. In order to breathe, it is necessary only for negative pressure to be established at some time during the respiratory act so that the lungs will be inflated sufficiently to obtain the tidal air. This is accomplished ordinarily by the fact that the respiratory muscles suddenly increase the size of the thorax. The sudden increase in size necessarily reduces the pressure of the interior, and air rushes into the lungs. If you have either a cube or a sphere containing air and suddenly increase its size, the pressure within obviously will be reduced until enough air has entered from the outside to make up for the increase of volume. When an opening is made into the chest wall, with the free admission of air, the ordinary response is an increase in the amplitude of the respiratory movements, or, in other words, an increase in the size of the thorax. If the opening is a small one, it is possible by a sudden increase in size of the thoracic cavity to reduce the intrapleural pressure sufficiently to enable the lungs to obtain the tidal air, because of the relatively slow entrance of air through a small thoracic opening. But, if the opening is sufficiently large, so much air will enter the pleural cavity with each inspiration that it will be impossible to establish a negative intrapleural pressure because the expansibility of the thorax is limited. Obviously, if negative intrapleural pressure cannot be established, the lungs cannot be inflated and respiration will cease. It seems to me that the explanation which I have offered is the only one which can explain the striking fact noted in the war that large wounds may be made in the chest wall without a necessarily fatal result. On the basis of this explanation, there is nothing surprising about the facts observed in the war. Unfortunately, at the time I published my first article I understated the maximum nonfatal opening of the chest wall in an average sized normal man because I had the impression from available textbooks of physiology that 3,700 c.c represented the average vital capacity in men. Subsequent information on the value of the vital capacity showed that the maximum nonfatal opening of the chest wall in the average man must be larger than originally stated.

DR. JOHN L. YATES, Milwaukee: As suggested both by Dr. Mitchell and Dr. Heuer, it is most desirable to prevent the development of chronic empyema. My argument is that the surest method of prevention is to arrest the process in the stage of acute serous pleurisy before acute empyema has developed. It must be recognized that the pleura reacts primarily in the same way to all irritants, and that differences in later reactions are not of necessity specific for any microorganism, but are due to variations in the intensity and duration of irritation as well as its character. If irritated visceral pleura be maintained in contact with the parietal pleura, fibrinous adhesions obliterating the pleura cavity are inevitable and empyema becomes impossible. Some day purulent pleurisy will be regarded as purulent peritonitis is now considered—a confession of therapeutic failure. Diagnostic methods for the prompt recognition of acute serous pleurisy will be developed. The institution of continuous automatic airtight drainage at this time is required. It is easily and simply done and without any cumbersome or expensive apparatus. From observations made as to the plan pursued by various operators, it was apparent that some men preferred to use differential pressure

and some did not; some preferred primary one-way drainage and some did not. The greatest advances to be made in thoracic surgery are to come through the prevention of empyema. The positive pressure gas-oxygen analgesia, devised by Gwathmey, and primary air-tight one-way drainage are going to make thoracotomy a feasible, safe operation, because they give the greatest protection against purulent pleurisy.

DR. CARL EGGERS, New York: No treatment of empyema is always the best. In the majority of cases, if actual pus is present, open drainage will give the best results. If we are dealing with a thin fluid, containing streptococci, it is best to delay open operation until pus has formed, and in the meantime use aspiration or some form of closed drainage. Empyema must be considered a serious condition, and if we are confronted with a patient with acute empyema we have to take into consideration all the factors pertaining to that case and then make up our mind what is best to do. I do not believe that empyema always starts as a simple pleurisy. I believe that in the majority of cases the fluid is infected from the beginning. All the streptococcus cases I have seen have had organisms at the first aspiration even though the fluid was still clear. I believe Dr. Mozingo's method of treatment is of value in certain forms of acute empyema, just as other closed methods are. In the cases we received from him, however, it was apparently not of much value. Some of the patients were classed as cured, but they had pain and dyspnea and the roentgen ray showed a well defined cavity filled with pus. Aspiration demonstrated pus filled with organisms, though the culture was negative. I could not consider such a patient cured. I do not believe an empyema patient is cured until all the fluid has disappeared and the cavity been obliterated.

## POTENCY OF SOME OLD HUMAN ISOHEMAGGLUTINATING SERUMS

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Some human isohemagglutinating serums of the parasthenic, II, and of the antiparasthenic, III, groups have been kept for one year. The bulk of the serums has been preserved by the addition of phenol to the extent of 0.5 per cent. A small portion of the serums was dried before an electric fan at room temperature and pulverized in a mortar. All of the serums were kept in the icebox, except that the phenol-preserved serums were taken out now and then for an hour or so to be used in determining the blood groups of prospective donors for blood transfusion. At the end of the year the erythrocytes of thirty persons were sufficiently agglutinated by the serums of the same persons in order to determine their blood groups. The value of the preserved serums to indicate the groupings of these persons was then determined. The thirty persons were distributed among the four groups as follows: sthenic, thirteen; parasthenic, twelve; antiparasthenic, three; antisthenic, two.

The phenol-preserved serums are very cloudy and have a distinct but slight sediment in the bottom of the rubber stoppered ampules in which they are kept. They give off a slight odor of phenol. The dried serums appear as dull buff powders. Just before they were used they were dissolved as far as they could be in distilled water containing 0.5 per cent. phenol, in the proportion of 75 mg. of the dried serum to 1 c.c. of the water.

In making the tests one drop of each of the phenol-preserved serums, falling from a capillary pipet of 1 mm. diameter, was placed on a series of slides. One drop falling from the same pipet of about a 10 per cent. suspension of the erythrocytes of the various persons of known blood groups, in 0.85 per cent. sodium chlorid solution, was added to the serum drops after the manner of Vincent.[1] To mix the erythrocytes and the serums the slides were gently rocked from time to time and observed for a period of fifteen minutes, being examined over a white background or a daylight microscope lamp with the unaided eye or with a pocket lens magnifying 10 diameters, or in doubtful cases under the low power of the compound microscope. Agglutination, when it occurred, was essentially always evident within five minutes.

TABLE 1.—ACTION OF DILUTIONS OF YEAR OLD PHENOL-PRESERVED SERUMS OF GROUPS II AND III ON THE ERYTHROCYTES OF PERSONS OF BLOOD GROUPS II AND III*

| | II Serum on | | III Serum on | |
|---|---|---|---|---|
| Dilutions | II Cells | III Cells | II Cells | III Cells |
| 1:64 | — | ± | ± | — |
| 1:32 | — | ± | + | — |
| 1:16 | — | + | +++ | — |
| 1:8 | — | + | +++ | — |
| 1:4 | — | ++ | ++++ | — |
| 1:2 | — | ++++ | ++++ | — |

* In the tables, — indicates no agglutination; ±, doubtful agglutination; +, ++, +++, ++++, agglutination in increasing degrees.

In the case of the dried serums their solutions were employed in the same manner as the phenol-preserved serums.

In all cases the phenol-preserved serums indicated the proper groupings of the thirty persons of known blood groups. In the case of the dissolved dried serums, the proper groupings were indicated in all those persons belonging to the sthenic and the antisthenic groups. In the case of the twelve persons belonging to the parasthenic group, eight were correctly indicated; four were incorrectly indicated as members of the antisthenic group, there being weak agglutination of their erythrocytes by the dissolved parasthenic serum. In the case of the three persons of the antiparasthenic group, the proper groups of two were correctly indicated by the dissolved dried serums; one was incorrectly indicated as a member of the antisthenic group, his erythrocytes showing weak agglutination by the dissolved antiparasthenic serum.

TABLE 2.—ACTION OF DILUTIONS OF DISSOLVED YEAR OLD DRIED SERUMS OF GROUPS II AND III ON THE ERYTHROCYTES OF PERSONS OF BLOOD GROUPS II AND III*

| | II Serum on | | III Serum on | |
|---|---|---|---|---|
| Dilutions | II Cells | III Cells | II Cells | III Cells |
| 1:64 | — | — | — | — |
| 1:32 | — | — | — | — |
| 1:16 | — | ± | + | — |
| 1:8 | — | ± | + | — |
| 1:4 | — | ± | ++ | ± |
| 1:2 | — | + | ++++ | + |

* Erythrocytes from the same individuals as in Table 1 were used.

The original agglutinating titer of these serums unfortunately was not obtained. It was noted when the serums were fresh, a year ago, that the antiparasthenic, III, serum was conspicuously more potent than the parasthenic, II, serum. The year old agglutinating titer of the two serums on the same sets of erythrocytes is shown in the tables. The loss of the agglutinat-

1. Vincent, Beth: A Rapid Macroscopic Agglutination Test for Blood Groups and Its Value for Testing Donors for Transfusion, J. A. M. A. **70**: 1219 (April 27) 1918.

ing properties of the dried serum is marked, as has already been noted by Karsner and Koeckert,[2] and by Kolmer;[3] but the loss is not nearly so great as reported by these authors. The acquisition of nonspecific agglutinating properties by the dried serums, also reported by Karsner and Koeckert, was noficed to a slight extent only, thus substantiating in part Sanford's[4] method of keeping isohemagglutinating serums. It is probable that various samples of isohemagglutinating serum vary somewhat in the retention of their activity and of their specificity.

SUMMARY

A sample of known parasthenic, II, and another of antiparasthenic, III, isohemagglutinating serum have kept preserved with 0.5 per cent. phenol and in the icebox for one year. Their agglutinating activities are good and they do not give nonspecific agglutinations.

The same serums kept in a dry pulverized state and in the icebox, redissolved in distilled water containing 0.5 per cent. phenol, for the most part show good agglutinating properties, but much inferior to the phenol-preserved serums. They also show a tendency to nonspecific agglutination.

## AN IMPORTANT FACTOR IN THE SUCCESSFUL TREATMENT OF MALARIA

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NEW ORLEANS

It has probably occurred in the experience of most of us who practice in those localities where malaria exists to find occasionally a case of malarial infection in which, in spite of a most thorough and proper treatment, it is apparently impossible to effect a cure. The patient, after being discharged as cured, as shown not only by clinical observation but by careful and repeated blood examinations following a recognized efficient course of treatment, will return after a variable interval with all the evidence of the infection again being present.

It is because of such occurrences that one is inclined at times to question not only his method of treatment but also the efficiency of quinin as a therapeutic agent in malaria. Quinin is the specific for malaria, and no other drug as yet has been proved to have the sterilizing power with *Plasmodium malariae* that it has. One's faith in the drug should not be shattered when the important factor in the successful treatment of malaria as brought out in this article is presented. When the excellent piece of malaria control work was being conducted jointly by the International Health Board and the Mississippi State Board of Health by Bass and his co-workers in 1916-1917 in Bolivar County, Mississippi, it was found that in the survey of the inhabitants of the county there were many carriers (infected individuals without clinical manifestations) of the malarial parasite who did not show visible clinical evidences of the disease. Since that time it has been my custom, whenever a case of malarial infection is discovered, to examine the bloods of all the members of the household. It is rather interesting to note that positive findings are discovered in this way. The presence of carriers in a household is the probable explanation of the apparently unsuccessful treatment in those cases of malarial infection that do not respond to the proper use of quinin, or to those that are proved cures, though the patients return with a supposed relapse, which is in reality a reinfection.

### REPORT OF ILLUSTRATIVE CASE

A colored boy, aged 6 years, was brought to the outpatient department of Touro Infirmary with the complaint of having had fever for two months. His mother stated that the fever was accompanied with chills and that he had fever every day. On being examined, the child was found to be infected with the estivo-autumnal type of *Plasmodium malariae*. His spleen was enlarged; otherwise the examination and history were negative. He was placed on quinin treatment, as advocated by Bass,[1] and his blood findings soon became negative and remained so. He was discharged as cured. After a lapse of several days he returned again complaining of chills and fever. His blood examination showed the presence of *Plasmodium malariae* estivo-autumnal type. He was placed on the quinin treatment again. His mother was instructed to come back and bring the other members of the household, two sisters and a brother. They were all found to be infected with the crescent form of the estivo-autumnal malarial parasite, though with the exception of enlarged spleens, they showed no other clinical manifestations of the disease. They were all treated and their bloods sterilized. They have not returned from that day to the present time, a period of five months, with the exception of one child 1 year and 8 months old brought for "worms" having a proved infection of *Ascaris lumbricoides*. The blood of this child continued to be free from plasmodia.

### COMMENT

The foregoing is an example of what might occur in the practice of any one, and should be constantly borne in mind when treating malaria. I can recall instances in the past before the plan suggested was instituted when properly treated patients would return with the disease after apparent cures, and in one instance the daughter of a physician who underwent several courses of treatment before she would "stay cured." In all these instances it is probable that had the bloods of the members of the households been examined, the sources of the infections would have been discovered.

2. Karsner, H. T., and Koeckert, H. L.: The Influence of Desiccation on Human Normal Isohemagglutinins, J. A. M. A. **73**: 1207 (Oct. 18) 1919.
3. Kolmer, J. A.: "The Influence of Desiccation on Human Normal Isohemagglutinins," J. A. M. A. **73**: 1459 (Nov. 8) 1919; The Influence of Desiccation upon Natural Hemolysins and Hemagglutinins in Human Sera, J. Immunol. **4**: 393 (Nov.) 1919.
4. Sanford, A. H.: A Modification of the Moss Method of Determining Isohemagglutination Groups, J. A. M. A. **70**: 1221 (April 27) 1918.

1. Bass, C. C.: Studies on Malaria Control: II. The Treatment of Malaria, with the Special Object of Disinfecting Infected Persons, Adopted After Wide Experience in Malaria Control by Treating Malaria Carriers in the Mississippi Delta, J. A. M. A. **72**: 1218 (April 26) 1919.

**Control of Diphtheria Carriers.**—During the average diphtheria outbreak, quarantine of the reported sick constitutes about 90 per cent. of the control measures now in common use, and is perhaps about 40 per cent. effective. Wherein does the average community fall down? In not attempting to find and properly care for the carriers. We quarantine the sick, placard the house, practice terminal fumigation and leave the care of the carrier to a kindly but overburdened Providence. It should be the routine business of all departments of health to see that the carriers in the homes of those sick should be found. Following every reported case of diphtheria, cultures from all members of the household should be secured through the physician, inspector or nurse.—L. L. Williams, Jr., *Commonhealth*, March-April, 1920.

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SATURDAY, OCTOBER 9, 1920

## IRON AND BLOOD REGENERATION

Although the management of the effects of simple hemorrhage and other types of secondary anemias represents one of the problems with which the clinician is frequently confronted, it must be admitted that the procedures still employed rest on a decidedly empiric basis. One is reminded, for example, that the rapidity of the restoration of the blood to normal depends "not alone upon the severity of the hemorrhage but also upon the age of the individual, his general nutrition, the supply of iron, and the reaction of the bone marrow."[1] There are, however, factors which include much that is vague and indefinite, particularly when an attempt is made to adjust a rational therapy to them. Thus, it is believed by many that the administration of iron salts may be beneficial not only in chlorosis, in which iron therapy has long had a favorable reputation, but also at times in secondary anemias.[2] The evidence of shortage of iron either in the body or in the available diet is mostly unfavorable to the need of special administration of the element to supply any such lack. The dosage of iron rarely bears any relation to the amount which it is expected will be utilized in the formation of hemoglobin; indeed, there is a subtle humor in the remark that the amount administered is frequently regulated with reference to the tolerance shown by the stomach. In defense of the otherwise inexplicable traditional iron therapy, it is often assumed that the element acts not merely as a building stone in forming the ferruginous hemoglobin, but rather as a drug which stimulates the hematopoietic organs, presumably the little understood bone marrow.

Iron therapy in cases of secondary anemia has at length been tested experimentally under well controlled conditions at the Hooper Foundation for Medical Research in the University of California.[3] The outstanding fact was that iron given as Blaud's pills (consisting essentially of ferrous carbonate, potassium sulphate and sugar) has no influence in simple secondary anemias, even under varied conditions of diet which of themselves do or do not favor rapid blood regeneration. Hemoglobin, the normal pigment of the red corpuscles, however, does exert a distinctly favorable influence. Most striking, on the other hand, is the effect of suitable dietary factors. Whipple and his associates[4] have demonstrated on dogs that whereas a diet of bread and milk sufficient for body maintenance will rarely permit of complete blood regeneration after simple secondary hemorrhage, although a very liberal ration of this type may gradually induce restoration, certain animal tissues in the food may have a profoundly beneficial effect. Cooked lean beef and beef heart are diet factors of importance. These food substances, alone or in combination with other foods, will give a rapid blood regeneration after anemia. Cooked liver is as sufficient as meat, and may be even more efficient in promoting complete blood regeneration subsequent to a standard anemia. The water extracts of meat or liver do not have this potency; whether it is associated with the proteins of these organs or some tissue pigments remains to be learned. The California investigators, having clearly demonstrated the profound effect of food factors on blood pigment regeneration, as they have also done in relation to bile pigment production, are thus justified in holding that those who claim iron to be a potent drug must first exclude the dietary influences that have just been indicated. The new investigations give another illustration of how often the physician may advisedly point to the grocery or butcher shop instead of the drug store as the source of potent preparations for his patients.

It is of considerable clinical interest to learn that even during fasting, after hemorrhage, measurable regeneration of red blood cells and hemoglobin may go on. Evidently the catabolizing protein furnishes the structural units for the new nitrogenous blood pigment. Unexpected is the observation that a hemorrhagic animal will actually form more red cells and hemoglobin during a fasting period than during a similar period of sugar feeding. Whipple, Hooper and Robscheit point out that since in neither case nitrogenous material is taken into the body, whatever hemoglobin and red cell stroma may be formed must be constructed in the organism from body protein or protein split products. They believe that the explanation lies in the well known protein-sparing action of carbohydrates, which tend to protect the body from disintegration and losses of protein and thus prevent the formation of catabolic "fragments" which would ordinarily be available to form new blood cells. In the words of the investigators themselves, the view here expressed postulates a strict

1. Hewlett, A. W.: Pathological Physiology of Internal Diseases, New York, 1917, p. 588.

2. Hatcher, R. A., and Wilbert, M. I.: Pharmacology of Useful Drugs, Chicago, American Medical Association, 1915, p. 365.

3. Hooper, C. W.; Robscheit, F. S., and Whipple, G. H.: Blood Regeneration Following Simple Anemia, V, The Influence of Blaud's Pills and Hemoglobin, Am. J. Physiol. **53**: 263 (Sept.) 1920.

4. Whipple, G. H.; Hooper, C. W., and Robscheit, F. S.: Blood Regeneration Following Simple Anemia, I, Mixed Diet Reaction, Am. J. Physiol. **53**: 151 (Sept. 1) 1920; II, Fasting Compared with Sugar Feeding, Analysis of "Sparing Action of Carbohydrates," ibid., p. 167. Hooper, C. W.; Robscheit, F. S., and Whipple, G. H.: III, Influence of Bread and Milk, Crackermeal, Rice and Potato, Casein and Gliadin in Varying Amounts and Combinations, ibid., p. 206. Whipple, G. H.; Robscheit, F. S., and Hooper, C. W.: IV, Influence of Meat, Liver and Various Extractives, Alone or Combined with Standard Diets, p. 236.

conservation by the body of certain protein fractions which may be recast into hemoglobin. The presence of carbohydrate may facilitate this reaction, but the actual new formation of hemoglobin may depend in part on the type and amount of amino-acid groups available from normal protein catabolism. Hemoglobin is admittedly a chemically unique protein. The few data already available show that not all proteins fed can facilitate its replacement with equal readiness. The physiology of the amino-acids thus again comes to the forefront of consideration.

## THE NORMAL URINARY PIGMENT, UROCHROME

The pigments that occur or arise in the body, with the exception of those of the blood and bile, have received little attention until a comparatively recent period. Enough has been learned of late, however, to demonstrate that it is no longer tenable to look on the various coloring matters encountered in the body as derivatives of the blood pigment, hemoglobin. Some of the circulating or deposited pigmentary products, such as xanthophylls and carotins, are unquestionably derived from ingested food, being ultimately of plant origin. Of late, the production of a carotinemia under certain conditions of diet has become familiar and accordingly has directed attention to the exogenous character of pigments that have in the past doubtless been mistaken as metabolic products.[1]

When one considers the rather characteristic color of the urine and the fact that it is continually being obtruded on our attention, it is indeed surprising that so few definite statements can be made about an ever-present physiologic phenomenon. The urine may at times be the carrier of varied coloring substances: bile pigments, blood pigments and their immediate derivatives, such as hematin and hematoporphyrin, urobilin and less well defined chromogens. Some of these compounds have an immediate diagnostic significance to the physician. But in addition to such pigments there is the omnipresent amber color to which the indefinite name of urochrome has been assigned.

This is the "normal" pigment of the urine. Discussed for more than a century, it has at most given rise to indefinite hypotheses as to its origin, and conflicting theories as to its nature.[2] Evidently it cannot be solely exogenous in origin, for the color of the urine persists unaltered after days or even weeks of fasting. Is it derived from blood or bile pigments? Is it a more direct product of metabolism? One will search physiologic literature in vain for a convincing answer. Experiments lately recorded by Pelkan[3] from the Department of Biochemistry of the University of California may help to establish the origin of urochrome more clearly. The comparisons that he has made between the output of this pigment in the urine and the plane of protein metabolism suggest a causal relation between these two factors. On a diet low in protein, the excretion of the pigment was invariably reduced. Increase in the protein intake tended to augment the output of the normal urinary color, although the expected proportionality was not always attained.

Pelkan suggests that the failure to secure a great increase in urochrome may be due to the inability of the organism to deal with more than a certain limited amount of the substance. The protein gelatin did not promote an increase in the output of pigment. As gelatin is an "incomplete" protein in that it lacks certain amino-acid groups—tyrosin, tryptophan and cystin—and since the missing aromatic radicals are the usual color-producing groups, the failure of gelatin to produce increments of urochrome may be thus explained. Pelkan asserts that he can obtain from proteins a derivative which gives reactions identical with those of urochrome, so that he ventures the belief that urochrome, lactochrome, and the newly discovered "protochrome" are identical and, at least to a large extent, are derived from the food proteins. Despite the uncertainty still attached to these questions, it is interesting to speculate on the possibilities of study that may be opened up if the urine color should actually be demonstrated to be an index of protein metabolism.

1. Carotinemia, editorial, J. A. M. A. **74**: 32 (Jan. 3) 1920; The Pigments Found in Nerve Tissues, ibid. **74**: 531 (Feb. 21) 1920.
2. A review of the subject is given by St. Dombrowski: Ztschr. f. physiol. Chem. **54**: 188, 1907-1908.
3. Pelkan, K. F.: Relation of Urochrome to the Protein of the Diet, J. Biol. Chem. **43**: 237 (Aug.) 1920.

## THE POPULAR "ARSENICALS"

The September issue of the *Archives of Dermatology and Syphilology* presents a number of significant features regarding the use of arsphenamin and related compounds that are at present being widely employed in the treatment of syphilis. To one who studies these statements of laboratory and clinical investigators in the special field involved there must come the conviction that many therapeutic perplexities still remain at the end of nearly a decade of trial for the types of compounds which Ehrlich introduced. It is well for the practitioner to realize this, especially when expert workers still make an appeal for conservative interpretations. Stokes[1] forcefully summarized the situation when he stated at the New Orleans session of the American Medical Association:

> Too short a time has elapsed since the discovery of these drugs, and too little is as yet known about the ultimate problems of the pathology, immunology and parasitology of syphilis, to justify the announcing of new infallibilities. The necropsy pathologist of the next fifty years may well, like Warthin, upset our most plausible generalizations of today. Seasoned tradition and conservatism are still the wisest guides in our interpretation of clinical cure. Arsphenamin has made it apparently possible and even probable, but only to the inexperienced has cure been made absolute and inevitable.

1. Stokes, J. G.: The Applications and Limitations of the Arsphenamins in Therapeutics, Arch. Dermat. & Syph. **2**: 303 (Sept.) 1920.

It is recognized that the exact composition of arsphenamin in its available form is not fully determined. As has been emphasized again, the quantitative determination of arsenic alone in arsphenamin is insufficient to estimate its purity;[2] in fact, interstate sale of arsphenamin is controlled by toxicity tests on guinea-pigs made by the Hygienic Laboratory of the United States Public Health Service. Consequently, practical medicine must be on its guard to employ a product which is carefully controlled by such toxicity tests as well as by other criteria. It will not do to charge untoward results offhand solely to idiosyncrasy of the patient, faulty administration or other errors in technic. The drug itself still has inherent dangers. It should be borne in mind also that neo-arsphenamin behaves differently in the animal organism from arsphenamin, and should not be regarded simply as arsphenamin in a convenient form for administration.

It is gratifying to learn from a government expert[3] that after the long struggle to produce satisfactory products, arsphenamin preparations made in the United States are generally less toxic than those of foreign manufacture. Neo-arsphenamin preparations made in the United States compare favorably, and in certain instances are decidedly less toxic than most of the foreign products. Timely presentations of the faults and dangers as well as the undisputed advantages of current therapy in the management of syphilis should be welcomed.

## Current Comment

### AMERICAN MEDICAL DIRECTORY

In the advertising pages this week is an announcement concerning the American Medical Directory. We emphasize the announcement here because of its importance. The securing and compiling of the information have been attended with extreme difficulties; not only has the number of removals and changes on the part of physicians been unusually large within the last two years, but also the labor situation has not been all that could be desired. All of this makes not only for delay, but also for increased expense in production. One of the big expenses yet to be met is that of paper —and here is the real reason for the announcement and for this editorial comment. In the past we have been liberal in printing a large number of books that might be called for later on; it is proposed this year to print only a sufficient number to supply those who order in advance and, on a carefully conservative estimate, the probable demand until the next biennial issue. Therefore all who desire the 1920 Directory should subscribe before November 1. Thus they can be sure not only of securing a copy but also of the pre-publication discount.

2. Raiziss, G. W., and Proskouriakoff, A.: The Chemistry of Arsphenamin and Its Relation to Toxicity, Arch. Dermat. & Syph. **2**: 280 (Sept.) 1920.

3. Roth, G. B.: Some Salient Facts Regarding the Toxicity of Arsphenamin and Neo-Arsphenamin, Arch. Dermat. & Syph. **2**: 292 (Sept.) 1920.

### PREVENTION OF AMPUTATION NEUROMAS

One of the undesirable phenomena frequently encountered after division of peripheral nerves is the formation of bulbous enlargements on the distal ends of the proximal segments. These neuromas, or nerve tumors, as they have been called, arise not only after damaging injuries to the tissues concerned but also after carefully conducted operations by skilful surgeons, and despite the absence of suppuration or similar inciting causes. The fact that they are peculiar to nerves suggests some special abnormality in the behavior of the peripheral nervous tissue. Owing to the spontaneously developing pain in their neighborhood, the neuromas are often the occasion for considerable professional concern. The importance of scar tissue in the production of amputation neuromas has repeatedly been emphasized in the past. An elaborate experimental study of the subject by the neurologist G. Carl Huber and the surgeon Dean Lewis[1] has brought considerable clarity in regard to the problems involved. They point out that a neuroma indicates an attempt, which is thwarted or blocked by scar tissue, on the part of the neuraxes of a divided nerve to seek the distal segment and thus complete nerve repair. These blocked regenerating neuraxes then either form spirals or irregularly distributed and dispersed fibers in the bulb, which react on its connective tissue elements. As a consequence, the latter thus increase in number and maintain their embryonal characteristics longer than is normally the case. Huber and Lewis found that various modes of operative procedure designed in the past to avert neuroma formation are ineffective in this respect; at most they may delay the undesired outcome somewhat. On the other hand, bearing in mind that any method likely to be successful must be directed against the neuraxes rather than against the connective tissue at the end of the nerves, these investigators have attained the desired results by injections of absolute alcohol. When this is thus introduced into the nerve a short distance above the plane of section, it has proved to be more successful in preventing neuroma formation than any of the other methods ordinarily employed. With a suitable technic to prevent escape of the irritating alcohol into the surrounding tissues and the possibility of scar tissue formation on that account, Huber and Lewis have not observed any appearance of a neuroma at the site of the injection. There is, accordingly, a prospect that amputation neuromas can be averted in the clinical surgery of the future.

### THE CENTENARY OF "OERSTED'S EXPERIMENT" AND THE SCIENCE OF ELECTROMAGNETISM

Electricity crosses the professional path of the physician in dozens of ways in the course of his medical work. The widespread utilization of electrical energy in the industries of today has exposed man to its dangers. Numerous accidents are caused by the electrical current, resulting in bodily harm and not infrequently in death to the victims. Before the

1. Huber, G. C., and Lewis, Dean: Amputation Neuromas, Arch. Surg. **1**: 85 (July) 1920.

invention of the dynamo there were rarely serious misfortunes of this sort, the cases of death arising only after electricity became applied industrially. Today they are of common occurrence. Electricity is not merely a menace, however: it is used by the physician in beneficent ways. Apparatus in which it plays a dominating part enters into the method of diagnosis and into the domain of therapy. The electrocardiogram is becoming familiar. Electrotherapy has long had a place in practice. Hence the medical fraternity may appropriately pause to pay a tribute to the memory of Hans Christian Oersted, who was responsible for the beginnings of the science of electromagnetism just a century ago. It was during the winter of 1819-1820 that Oersted observed that a wire uniting the ends of a voltaic battery affected a magnet placed in its vicinity, and after prosecuting his inquiries some months longer, in July, 1820, he published his Latin tract, "Experimenta circa effectum Conflictus Electrici in Acum Magneticum."[1] It is interesting to know that this distinguished Danish physicist, who was a professor at the University of Copenhagen, where the centenary of his great discovery has just been fittingly celebrated, was the son of a country apothecary and originally studied medicine. Thus, like many others who have achieved distinction in science, Oersted began his career with ambitions for a knowledge of medical disciplines. His observations, connecting electricity with magnetism in ways not anticipated before the "Oersted experiment," are a lasting monument. It has been said that Oersted stumbled upon his discovery by sheer accident. The answer, given to a similar remark about Newton, is illuminating: "Such accidents only meet persons who deserve them."[2]

## UROBILIN OF HEPATIC ORIGIN

To a group of pigments derived by bacterial action from the normal pigments of the bile, the name urobilin has been given. The appearance of the latter in the urine is usually looked on as a sign of irregular or abnormal functioning somewhere in the organism. A common hypothesis allocates the formation of urobilin to the intestine. From there it may be excreted through the bowels, destroyed or reabsorbed and carried to the liver, whence it is returned to the bile and consequently to the bowel.[3] Unless bile pigments are reaching the intestine, urobilinuria does not ordinarily occur, thus suggesting the intestine as the usual seat of its formation. Urobilinuria is insignificant or absent when there is a complete obstruction of the common bile duct. On the other hand, the presence of urobilin or related compounds in the urine is frequently interpreted as a sign of hepatic disorder on the theory that some damage to the liver has interfered with its normal function of removing the reabsorbed transformation pigment from the portal blood, so that it has a chance for excretion by the kidneys. Obviously, the recognition of urobilinuria as an indication of disease postulates some accurate information as to the origin of urobilin. Whipple, Hooper and Robscheit[4] assert that there is no conclusive proof that urobilin is ever absorbed from the intestine. They have made the significant observation of the constant presence of urobilin in the bile of fasting dogs carrying a biliary fistula. They state that at times the bile pigments may be almost completely replaced by the urobilin pigment. According to them it seems probable that the appearance of urobilin in such animals is attributable to its production, in part at least, from the bile pigments in the bile ducts as the result of the activity of bacteria known to be responsible at times for this reaction in the intestine. It is pointed out that during fasting periods the flow of bile is very sluggish, and this inferior drainage of bile gives a favorable opportunity for the bacteria to multiply. It can be stated that bacteria are numerous in all bile fistula tracts and may at times set up an inflammatory reaction in the bile passages which will cause trouble. Flushing out the bile passages by cholagogue action as a rule gives relief to this condition. In view of all this, the occasional if not frequent hepatic origin of urobilin is suggested. This must hereafter be borne in mind in all attempts to interpret the clinical conditions in association with which urobilin is noted in the urine.

## CIRCUMSPECT LYING

"Succus Cineraria Maritima" is sold by the Walker Pharmacal Company as a "nonsurgical treatment for cataract and other opacities of vision." The medical profession is at present receiving through the mail circulars extolling this nostrum for its alleged virtue in "absorbing" various forms of cataract. False and fraudulent claims made on or in the trade package provoke trouble. In February, 1917, the Bureau of Chemistry of the United States Department of Agriculture issued Notice of Judgment No. 4508: "United States *vs.* the Walker Pharmacal Company." The government had seized a quantity of Succus Cineraria Maritima and analyzed it, reporting that the stuff "was essentially an aqueous solution of glycerin, boric acid and vegetable drug extractives carrying tannin-like bodies." The Walker Company had been indiscreet enough to make claims on the trade package to the effect that this nostrum was a remedy for cataract and other opacities of the eye. As a result, the company was haled into court on the charge that these claims "were false and fraudulent in that the same were applied to the article knowingly and in reckless and wanton disregard of their truth or falsity." Did the company justify the claims—claims that it is still making through other avenues to the medical profession? It did not; it entered a plea of guilty and was fined! Subtract the claims made by nostrum venders in their trade packages from the claims made in their circulars and other advertising, and what you have left is falsehood. And there is usually a great deal left.

1. Science **52**: 288 (Sept. 24) 1920. Cajori, F.: A History of Physics, 1916.
2. Jones, B.: Life and Letters of Faraday, London **2**: 390, 1870.
3. Wilbur, R. L., and Addis, Thomas: Urobilin: Its Clinical Significance, Arch. Int. Med. **13**: 235 (Feb.) 1914. Meyer-Betz: Ergebn. d. inn. Med. **12**: 734, 1913.
4. Whipple, G. H.; Hooper, C. W., and Robscheit, F. S.: Blood Regeneration Following Simple Anemia, II, Fasting Compared with Sugar Feeding, Am. J. Physiol. **53**: 167 (Sept.) 1920.

# Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

## ARKANSAS

**District Medical Society Election.**—At the meeting of the Tenth Councilor District Medical Society at Little Rock, September 16, the following officers were elected for the ensuing year: president, Dr. John J. Smith, Paris; secretary, Dr. John H. Harvey, Little Rock, and treasurer, Dr. Arthur F. Hoge, Fort Smith.

## CALIFORNIA

**Personal.**—Dr. Eugene G. Nothington has assumed his duties as superintendent of the San Francisco Hospital, succeeding Dr. Richard George Brodrick.

**Chiropractors Seek Special Legislation.**—Through an initiative measure to be submitted to the people in November, the chiropractors of California are seeking to secure a separate board of registration. Their registration is already provided for under the medical practice law which limits their practice to the use of chiropractic methods.

**Diphtheria Carriers Barred from School.**—In defiance of the order of the health officer of Berkeley regarding the attendance of diphtheria carriers in public schools, fourteen pupils of high schools recently attended the classes. It was ruled by the district attorney that the order of the health board be carried out compelling all pupils declared to be carriers or contracts with diphtheria to remain out of school.

## FLORIDA

**New Hospital.**—A hospital corporation capitalized at $160,000 has been formed at Panama City for the purpose of building a modernly equipped charity hospital.

**Plague Research Station at Pensacola.**—The U. S. Public Health Service has established at Pensacola a research station for the study of bubonic plague. A number of trained experts in addition to those already on duty in Pensacola will be detailed to that city. Additional research equipment will be provided to facilitate their investigations.

**State Board of Health Widens Program.**—By the new program recently adopted by the state board of health, the message of health will be carried directly to the homes of citizens, particularly in the remote rural districts. Field directors will work simultaneously in several adjoining counties under the direction of an experienced director of rural sanitation, and a campaign to correct any defects discovered after careful survey will follow.

## GEORGIA

**Personal.**—Dr. Dawson Allen has been appointed health officer of Baldwin County, succeeding Dr. J. L. Herring, resigned.——Dr. Dorothy Bocker, Milledgeville, has been appointed by the state board of health as assistant director of child hygiene.

**Battey Memorial Favored.**—At a meeting of the Floyd County Medical Society, September 18, a resolution was adopted favoring the Dr. Robert Battey Memorial movement recently launched by the Seventh District Medical Society. Drs. Robert H. Wicker, Robert O. Simmons and William J. Shaw, all of Rome, were appointed as a committee to cooperate with the district body.

## ILLINOIS

**Hookworm and Pellagra in Illinois.**—Five cases of pellagra were recently discovered in Williamson County by Dr. Andrew W. Springs. A case of hookworm disease was also reported from the county, and a thorough investigation is being made by Dr. Christian S. Deihl, special investigator of the state department of health.

**Physicians Violate Federal Acts.**—It is reported that Drs. Cornelius J. Donovan and Walter K. Hoover, Lovington, pleaded guilty to charges of violating the Harrison Narcotic Act by failing to keep records of prescriptions on blanks provided by the government for the purpose. Both were fined $100 and costs.——Dr. James M. Juvinall, Weldon, is reported to have pleaded guilty to a charge of issuing whisky prescriptions without previous examination and was assessed a fine of $500 and costs.

### Chicago

**Hospital Elects Chief of Staff.**—At a meeting, held September 25, Dr. Archibald Hoyne was elected chief of staff of the Cook County Contagious Disease Hospital.

**Laryngologic and Otologic Society Holds Meeting.**—The Chicago Laryngological and Otological Society held its first meeting October 4, at the Palmer House. Prof. Carl E. Seashore of the University of Iowa presented a paper on "The Psychology of Sound." A dinner, at which Professor Seashore was the guest of the society, preceded the regular meeting.

**Chicago Medical Society Meeting.**—Preceding the regular meeting of the Chicago Medical Society, October 6, a banquet was given at the University Club with Dr. Fred H. Albee, New York City, as the guest. Dr. Frank Smithies later addressed the society on "Non-Surgical Drainage of the Biliary Tract," and Dr. Albee delivered an illustrated lecture on "Osteoplastic Surgery."

## INDIANA

**State Medical Association Meeting.**—The annual meeting of the Indiana State Medical Association was held in South Bend, September 23-25, under the presidency of Dr. Charles H. McCully, Logansport, and the following officers were elected: president, Dr. David Ross, Indianapolis; vice presidents, Drs. Hugh J. White, Hammond, Ira M. Washburn, Rensselaer, and Otto R. Spigler, Terre Haute; secretary-treasurer, Dr. Charles N. Combs, Terre Haute (reelected); delegate to the American Medical Association for two terms, Dr. Joseph Rilus Eastman, Indianapolis, and alternate, Dr. Malachi R. Combs, Terre Haute. A resolution paying tribute to the memory of Gen. William C. Gorgas, and outlining General Gorgas' influence in the cause of scientific medicine and his work for humanity, was unanimously adopted by the association. The next annual meeting will be held at Indianapolis, Sept. 27-29, 1921.

## IOWA

**Personal.**—Dr. Winfield S. Devine, Marshalltown, has been appointed chief surgeon of the Iowa Soldiers' Home to succeed Dr. George A. Mershon, resigned. The appointment became effective September 1. Dr. Mershon will return to Mobile, Ala., to engage in private practice.

**State Board of Health Laboratory.**—A branch of the state board of health laboratory has been established at 319 Iowa State Bank Building, Burlington, with M. E. Chehak as bacteriologist in charge. This is in conformity with the established policy of the state board of health to place laboratories in the larger cities throughout the state. Bacteriologic examinations, including examinations for diphtheria, typhoid fever and tuberculosis, will be performed at the laboratory and it is expected that full reports will be obtainable within from eight to twelve hours after receipt of the specimen.

## KENTUCKY

**Typhoid in Jefferson County.**—Numerous scattered cases of typhoid fever have been reported from points throughout Jefferson County. Dr. Irvin Lindenberger, Louisville, county health officer, has issued a warning to residents to take special precautions to guard against infection. Most Kentucky drinking water, unless filtered, requires some method of purification. The engineering bureau of the state board of health suggested as the most effective disinfectant, chlorid of lime. Seventy-eight cases of the disease were reported up to the middle of September.

**Legality of Health Board Attacked.**—In the course of their defense in the trial of the Standard By-Products Company, which was charged with maintaining a nuisance in Louisville, the attorneys attacked the legality of the Louisville City Health Department, declaring that an ordinance of 1893 provided for its election by the city council. The legality was defended by the declaration that the authority for its appointment came from an older ordinance which gave the naming of the board, and complete authority over it, to the board of safety. This older ordinance had not been amended when the 1893 ordinance was adopted.

## LOUISIANA

**Malaria Incidence Greatly Reduced.**—It is reported by Dr. Oscar Dowling, president of the Louisiana State Board of Health, that malaria has been reduced 50 per cent. at Mound

within the current year, as a result of the work done there by health officers under the direction of the state board of health and the International Health Board. Mosquitoes have been reduced 87 per cent. in houses in that vicinity.

**Segregation of Tuberculous.**—The Covington Board of Health has passed an ordinance, effective October 1, prohibiting any person, firm or corporation from housing for pay any consumptive within 1,500 feet of the parish court building. The measure is aimed to stimulate the tuberculous to live in open rural sections rather than the congested part of the town, and to protect visitors at the hotels from contact with the tuberculous.

## MARYLAND

**Infantile Paralysis in Washington County.**—Five cases of infantile paralysis have been reported to Dr. Samuel M. Wagaman, Hagerstown, health officer of Washington County, within the last few months. The last case was found near Big Pool.

**Typhus Fever in Baltimore.**—A case of typhus fever has been discovered in Baltimore, according to a statement by Health Commissioner C. Hampson Jones. The patient, a white girl, 17 years old, employed in a factory, had been ill several days before the diagnosis was made. It has been pronounced a typical case by experts called in consultation. The health department is investigating the source of infection.

**Plans for Hospital Campaigns.**—A "hospital luncheon" was given recently at the Church Home and Infirmary, Baltimore, in preparation for a drive for funds which will be made during the ten days starting October 15. Due to lack of sufficient facilities, twice as many persons have been turned away as have been admitted during the last year. Dr. Thomas S. Cullen is chairman of the medical advisory committee.——A canvass for subscriptions to the $350,000 campaign of the University Hospital, for a nurses' home and maternity hospital, was formally opened, October 1, at a dinner at the City Club.

**Day Nursery Opened.**—The first municipal day nursery was formally opened in Baltimore at 1513 Presstman Street, October 1, under the auspices of the Bureau of Child Welfare. The nursery, which is for colored children, will make provision for the care of children of women who are employed during the day. All three floors of the building have been turned over to the new health work and the nurseries are splendidly equipped with white safety cribs, spotless blankets and bed muslins. Two rooms on the lower floor are to be used as playrooms and are fitted with tables and toys. Dr. Alma S. Rothholz will make medical inspections of the children three times a week.

## MASSACHUSETTS

**Ether Day Anniversary.**—The exercises commemorating the seventy-fourth anniversary of Ether Day will be held in the Massachusetts General Hospital, Oct. 18, 1920. The Ether Day address will be delivered by Dr. Alonzo E. Taylor, Philadelphia.

**Epidemic of Poliomyelitis.**—Up to September 11, 211 cases of poliomyelitis were reported to the Massachusetts State Board of Health. Most of these cases were in eastern Massachusetts, in the general vicinity of Boston. The Boston City Hospital has opened a special ward for victims of infantile paralysis. A commission at Harvard University, consisting of Drs. Milton J. Rosenau, Robert W. Lovett and Francis W. Peabody, has been conducting special investigations, and has been holding clinics and conferences in an endeavor to cooperate in the control of the epidemic.

**Medical Registration Act Upheld.**—An equity suit of Willard M. Lindsey, Worcester, to compel the state board of registration in medicine to grant him the right to practice medicine without examination was decided, by a decision written by Justice Oliver Wendell Holmes of the United States Supreme Court, in favor of the board. In his decision Judge Holmes said in part: "The charge of malice and improper motives against the board are immaterial. It was plainly their duty under the statutes to refuse a demand without examination when the demand was not made until 1898."

## MICHIGAN

**Detroit Extends Sewerage System.**—Together with a bond issue for water works extension, approval was recently given by the voters of Detroit for an outlay of $25,000,000 to build sewer extensions. This work will open up for home development large tracts of land now sparsely settled owing to want of sewers. The highest infant mortality rates in the city are found in some of these unsewered areas. The construction of sewage treatment plants will also put an end to pollution of boundary waters.

**Tuberculosis Preventorium Opens.**—The tuberculosis preventorium established by the Grand Rapids Anti-Tuberculosis Society was formally opened, September 19, by public inspection. Children between the ages of 5 and 14 residing in homes where they are exposed to tuberculosis, or those who are undernourished, will be admitted to the home in order that they may be given an opportunity to regain their strength and thus be better able to resist the disease. The home will provide accommodations for twenty-five patients.

## MISSISSIPPI

**County Society Meeting.**—Physicians of Holly Springs were hosts to the North Mississippi Six-County Medical Society which convened there September 15. The society is composed of physicians of Marshall, Benton, Tippan, Union, Lafayette and Yelobusha counties.

**County Plans Malaria Survey.**—Monroe County Health Department under the direction of Dr. Felix Joel Underwood will make a complete malaria survey of Aberdeen. A house to house canvass will be made and a drop of blood will be taken from each individual for microscopic examination. Those persons found infected with malaria will be referred to the family physician for persistent treatment until cured. The test will be optional and no one will be coerced against his will.

## MISSOURI

**Medical Society Meeting.**—The program of the St. Louis Medical Society will be furnished by visiting physicians in attendance on the meetings of the American Child Hygiene Association, which will hold its annual session in St. Louis, October 11-13, and the Central States Pediatric Society, which will meet October 13-14.

**Postgraduate Meeting in St. Louis.**—The councilor of the twentieth district, the secretary of the Missouri State Medical Association and officers of the St. Louis Medical Society are cooperating to arrange a large number of clinics to be held at St. Louis, November 9-11. It is their intention to have medical, surgical and special clinics in practically every hospital in the city during these days. Physicians of Missouri and Illinois will be given an opportunity to attend the clinics.

## NEBRASKA

**Typhoid Epidemic in Omaha.**—Twenty-one cases of typhoid fever were recently put on record in the city health department of Omaha. Ten of these were found in the district north of Nicholas to Ohio streets and east of Twenty-Fourth Street. The homes of these patients were served by one milk route supplied by a certain dairy. On investigation, Dr. J. F. Edwards, health commissioner, stopped all sales of milk from that dairy, and the number of new cases immediately declined.

## NEW MEXICO

**State Medical Society to Meet.**—The thirty-eighth annual meeting of the New Mexico Medical Society will be held at Roswell, October 15 and 16, under the presidency of Dr. Charles A. Frank, Albuquerque. The meeting place and headquarters will be at the Elks' Club, where the annual banquet will be given Saturday, October 16.

## NEW YORK

**New Hospital.**—Ground has been broken for the erection of St. Jerome's Hospital, Batavia, to cost $100,000.

**Healthmobile in Fulton County.**—The "healthmobile," a motor truck completely equipped with electric generator, storage battery, moving picture machine and screen, so that health films can be shown anywhere in the state, the property of the state department of health, is making a tour of Fulton County from September 28 to October 15.

**Smallpox Outbreak at Elmira.**—An unrecognized atypical case of smallpox at Elmira recently caused thirteen other cases among hospital patients, employees and other contacts. The minor epidemic was traced to a rolling mill worker, who was taken to the Elmira Hospital with the diagnosis of pneumonia, eight days after his arrival from Alabama, and who at the time of his discharge had numerous papules over his face and hands. All of the cases were mild.

**Blood Examinations Required in Stillbirths.**—Commissioner of Health Hermann M. Biggs has addressed a letter to every

physician of the state asking that a specimen of blood be examined in each instance of stillbirth, miscarriage or abortion. It is hoped in this way to discover those cases needing antisyphilitic treatment and thereby to reduce the number of stillbirths. The average number of stillbirths in New York state during the last five years has been slightly over 10,000. The state laboratory at Albany and the branch laboratory in New York City are prepared to make the tests free of charge.

### New York City

**Leper Suspect in Hospital.**—Chin Hoang, a Chinaman, recently arrested by federal agents on a charge of stealing cocain from a ship in South Brooklyn, after examination by three physicians was certified as a leper suspect. The United States attorney declared that he would not submit prisoners to the possibility of contagion and sent the prisoner to the Willard Parker Hospital for contagious diseases.

**Work for Undernourished Children.**—The gratifying results of the summer play schools, established primarily for the benefit of undernourished and backward children, have influenced Health Commissioner Royal S. Copeland to recommend an extension of this work. Five such schools were operated during the summer, medical reports from which show that the nutrition grade of every child increased about 15 per cent., the average gain in weight being 2 pounds.

## NORTH CAROLINA

**Personal.**—Dr. Arch Cheatham, Durham, superintendent of health, who has been away from his office for some time on account of failing health, has recovered sufficiently to return to duty.——Dr. R. A. Herring, health officer of Wilmington, has tendered his resignation to accept a professorship in the medical department of the University of Georgia, Augusta.

**Venereal Clinic to Reopen.**—The free clinic for the treatment of venereal diseases at Greensboro, which was discontinued some time ago when state aid for its maintenance was withdrawn, will be reopened according to plans recently arrived at by the city commissioners. The commissioners voted to appropriate an additional $100 per month to defray expenses of the health department and this appropriation will enable the commissioner of public safety to reopen the clinic.

## OHIO

**Contract Awarded for Hospital.**—Contracts have been awarded for a new $130,000 children's tuberculosis hospital at Columbus.

**Cleveland Academy Meeting.**—At a special meeting of the Cleveland Academy of Medicine, October 8, Dr. Harvey Cushing, Boston, delivered an address on "The Special Field of Neurological Surgery."

## PENNSYLVANIA

**State Assumes Health Control.**—Legal representatives of the state department of health have taken charge of health administration in the boroughs of Eddystone, Delaware County; Lemoyne, Cumberland County, and Elco, Washington County, until new boards of health can be organized and given charge.

**Activities of Antivivisectionists.**—It is reported that letters were recently sent to candidates for the legislature of the state of Pennsylvania in an effort to influence them in behalf of the antivivisectionists' program of restricting the field of scientific medicine. The letters were on the letter head of the American Anti-Vivisection Society, 22 South Eighteenth Street, Philadelphia.

**Personal.**—Dr. Joseph J. Meyer has been appointed chief of the genito-urinary dispensary, Johnstown.——Dr. J. Moore Campbell, associate medical director, has been appointed as acting chief medical director, to succeed Dr. Howard L. Hull, who resigned to enter the U. S. Public Health Service. ——Dr. George K. Strode, West Chester, chief of the division of school hygiene, has resigned to accept an appointment with the Rockefeller Institute.——Dr. Wilmer Dreibelbis, Lehighton, has left for service in China.——Dr. Frank F. D. Reckord, Harrisburg, associate director of the tuberculosis division of the state department of health for the past five years, has resigned to resume private practice.——Dr. David I Miller, Harrisburg, has been appointed medical director for Dauphin County and chief of the state tuberculosis dispensary, located at Harrisburg.——Dr. William L. Estes, South Bethlehem, for nearly forty years a practitioner in that place, having reached the age of 75 years, has retired from the staff of St. Luke's Hospital.

### Philadelphia

**Jefferson Dedicates Memorial Tablet.**—The Alumni Association of Jefferson Medical College dedicated a bronze memorial tablet to the graduates of the college who died in service during the World War, October 7. The exercises were held in the hospital amphitheater. Introductory remarks were made by Dr. S. Solis-Cohen, president of the Alumni Association, and the presentation was made by Dr. John C. DaCosta, Samuel D. Gross professor of surgery.

**Personal.**—Dr. Paul A. Lewis, director of the laboratory at the Henry Phipps Institute, sailed, September 25, for England where he will attend the meetings of the British Tuberculosis Association at Liverpool, early in October. From England Dr. Stewart will go to France as a representative of the National Tuberculosis Association of the United States to the Interallied Conference on Tuberculosis.——Dr. John F. X. Jones was slightly injured in an automobile accident, September 29.——Dr. Walter R. Krauss, for four years assistant superintendent of the State Hospital for the Criminal Insane at Fairview, has resigned to enter the U. S. Public Health Service.——Dr. Morris Smith has been appointed laryngologist, and Dr. John B. Donnelly, pediatrician, at the State Tuberculosis Clinic.

## SOUTH CAROLINA

**New Hospital for Negroes.**—In order to promote the welfare of the negro race of Laurens County, Mrs. C. M. Gibbon, a woman of financial means, has set aside a trust fund of $11,000 for the purpose of establishing and maintaining a hospital for negroes. The gift is made on condition that the negroes of the county raise a sum of $15,000 within three years to be devoted to the same purpose. The hospital, if established on the terms set forth, will be known as the Corrinna Gibbon Hospital.

## TEXAS

**Tuberculosis Worker Publicly Entertained.**—A public luncheon was given for Dr. Donald B. Armstrong, assistant secretary of the National Tuberculosis Association, on the occasion of his recent visit to Houston, as the guest of the Houston Anti-Tuberculosis League. Dr. Armstrong later addressed the Harris County Medical Association on the scientific methods of combating tuberculosis employed at the Framingham health demonstration in Massachusetts.

**Health Notes.**—Dr. Claude E. Watson, assistant state health officer of Dallas, has tendered his resignation in order to enter private practice in Dallas.——Three new health workers have been added to the field staff of the Texas Public Health Association to aid in the campaign for improving health conditions in Texas.——Employees of the state department of health presented the department with a portrait of Dr. Charles W. Goddard, formerly state health officer, who resigned to accept directorship of the medical staff of the University of Texas.

## UTAH

**Health Notes.**—Dr. Albert E. Thompson has been appointed health officer of St. Clair to fill the unexpired term of Dr. Frank E. Carney, resigned.——For the purpose of explaining the meaning of "clean school contests" and the crusader movements; James H. Wallis, executive secretary of the Utah Public Health Association, has arranged a series of visits to teachers' institutes in southern Utah.

**State Medical Association Meeting.**—At the last annual meeting of the Utah State Medical Association, held in Salt Lake City, the following officers were elected for the ensuing year: president, Dr. Robert Hampton, Salt Lake City; vice presidents, Drs. Eugene H. Smith, Ogden, Claude E. McDermott, Castle Gate, and Claude J. Shields, Salt Lake City; secretary, Dr. William L. Rich, Salt Lake City, and treasurer, Dr. Frederick L. Peterson, Salt Lake City. It was decided to hold the 1921 meeting at the state university, Salt Lake City.

## VIRGINIA

**State Society Meeting.**—The Medical Society of Virginia will hold its annual meeting, October 26-29, at Petersburg. It is confidently expected that the attendance will outnumber the record of previous years.

**New Health Officer for Norfolk County.**—Dr. Edgar Clay Harper, formerly engaged in public health work in Henry County, was recently elected director of health of Norfolk County succeeding Dr. Hasbrouck DeLamater, resigned.

## CANADA

**Western Ontario Academy of Medicine.**—At the meeting of the Divisional Ontario Medical Association and the Western Ontario Academy of Medicine, held in London, Ont., September 30, Prof. Benjamin P. Watson, Toronto, was one of the principal essayists. Dr. James H. Mullin, Hamilton, president of the Ontario Medical Association, and Dr. Frank A. Kelly, Detroit, were among the honored guests at the meeting.

**Department of Soldiers' Civil Reestablishment.**—Dr. Walter C. Arnold has been appointed director of medical services of the Department of Soldiers' Civil Reestablishment, succeeding Dr. Evans G. Davis, recently appointed a member of the Board of Pension Commissioners for Canada.——There are at present 5,923 exsoldiers on the lists as beneficiaries of the Canadian Department of Soldiers' Civil Reestablishment. In addition during each week an average of 9,000 attend the clinics of the department for medical advice, massage and occasional treatment.

**Health Department Investigates "Cancer Cure."**—Dr. John Amyot, C.M.G., deputy minister of health, Ottawa, recently spent four days in Toronto investigating the reputed cancer cure of Dr. Thomas James Glover. Dr. Glover has been ordered by the Federal Department of Health to make a complete presentation of his serum and cases before the Toronto Academy of Medicine within three weeks, and he will be afforded whatever assistance he needs in the presentation of his case. The department of health had been in receipt of many communications on the subject, but, as Dr. Glover had never disclosed his serum nor published any scientific communications nor presented his claims before any recognized body, the department was not qualified to reply intelligently to the communications.

## GENERAL

**Dietetic Association to Meet.**—The annual meeting of the American Dietetic Association will be held at New York, October 25 to 27. Headquarters will be at the Hotel McAlpin.

**Ohio Valley Association Meeting.**—The twenty-third annual meeting of the Ohio Valley Medical Association will be held in Evansville, November 9 and 10, under the presidency of Dr. Virgil Moon, Indianapolis.

**Southern Tuberculosis Conference.**—The Southern Tuberculosis Conference will be held in Jacksonville, October 11-13, and state health officers from Mississippi, Georgia, Kentucky and Florida have been invited to attend.

**Exchange Students from Belgium.**—Twenty-two Belgian graduate students recently arrived in the United States to enter various American universities under a fellowship exchange plan instituted by the educational foundation of the Commission for Relief in Belgium. A number of these Belgian students are graduates in medicine and will continue their medical studies in this country.

## LATIN AMERICA

**Epidemic Encephalitis in Uruguay.**—The National Board of Public Health of Uruguay has decided to make lethargic encephalitis a reportable disease and to apply to it the same preventive measures applied to influenza. During the month of June, 1920, twelve cases of the disease were reported at Montevideo.

**Personal.**—Dr. Carl Heuser of Buenos Aires has been visiting medical and research centers of the United States, especially in New York City, Chicago, Rochester, Detroit and Pittsburgh. Dr. Heuser is a well known radiologist and is the author of a treatise on radiology highly praised by Argentine medical journals. The chief purpose of Dr. Heuser's trip was to attend the meeting of the American Society of Radiology.——Dr. Pedro Fariñas of Havana attended the meeting of the American Society of Radiology as representative of the Department of Sanitation of Cuba. ——Dr. Rogerio Holguín of Colombia arrived in New York City, September 24.——Dr. L. F. Calderón has returned to Bogota after eight years in the Old World.——Dr. J. Zuloaga has returned to Manizales after a trip to Europe and the United States.——Dr. A. de Vasconcellos, Dr. A. Rocha and Dr. Marques Lisboa are the representatives of Brazil at the International Congress on Foot-and-Mouth Disease which convened at Buenos Aires in September.——Dr. G. de Paula Souza, professor of hygiene and forensic medicine at the S. Paulo medical school, has returned to S. Paulo from a two years' study in the United States in connection with the Rockefeller Foundation.——Dr. Wilson Smillie of the Rockefeller Foundation in Brazil was tendered a "lunch" by the medical profession of S. Paulo as he was leaving to spend his vacation in the United States.——Dr. A. de Castro of S. Paulo has gone to Montevideo to present his method of treating foot-and-mouth disease in competition for the prize offered by the Uruguay Society for an effectual cure of this disease.

## FOREIGN

**Experimental Research on Heredity.**—The Prussian Academy of Sciences has awarded 1,000 marks to Dr. Agnes Bluhm to aid her experimental research on problems of heredity.

**Orthopedic Meeting.**—The second Congrès français d'orthopédie meets at Paris this week to discuss Abbott's treatment of scoliosis, Volkmann's ischemic retraction, and tendon anastomosis for paralysis.

**Nomenclature Commission Meeting.**—The French Government has convoked the International Commission for the Revision of the Nomenclature of Diseases and Causes of Death to meet in Paris, Oct. 11, 1920. Dr. Jacques Bertillon is permanent secretary of the commission.

**Italian Radiology Congress.**—The third Italian Congress on Medical Radiology is to convene at Rome, Oct. 28, 1920, with Prof. F. Ghilarducci in the chair. The three principal subjects to be discussed are radioactivity in biology and the clinic; radiologic study of the heart and large vessels, and the present status of radiotherapy of cancer.

**Poland Gets Typhus Hospital.**—At the request of the League of Red Cross Societies a large typhus research hospital will be operated in connection with the new American Red Cross hospital recently established at Wilno. For the last two years hospitals in northern and eastern Poland have been flooded with typhus patients and in localities where hospitalization is inadequate, as in Galicia, whole villages have been wiped out.

**Morphin Addicts Among Physicians.**—The *Vie médicale* comments on the recent trial at Paris of eight physicians for having obtained unusually large amounts of morphin, from 2,000 to 7,800 ampules in the course of three months. They admitted the transactions but claimed that they were not "guilty" but "diseased," saying that the morphin was indispensable for them to relieve their own sufferings. The judge acquitted them.

**German Medical Organization for Sexual Ethics.**—The German Aerztebund für Sexualethik already numbers 1,000 members and is rapidly growing. It appeals to all German physicians to join and aid in the accomplishment of its purpose which is to eradicate prostitution and to make it possible for every young German man to marry when he reaches 25. The organization publishes a monthly, *Der Arzt als Erzieher*. The headquarters of the organization are at Anhalterstr. 16, Halle a. S.

**Cancer in Switzerland.**—The *Deutsche medizinische Wochenschrift* in commenting on a recent compilation of cases of mammary cancer in Switzerland, states that cancer is so prevalent in Switzerland that every twelfth person over 35 years old faces the prospect of dying of cancer. In a recent five year period, gastric cancer formed 37.9 per cent. of the total; cancer of the female genitals 16.1 per cent., and mammary cancer, 10.6 per cent. The average survival of the operative mammary cancer cases was a little less than five months.

**Mushroom Poisoning.**—Our German exchanges mention that during the first two weeks in August, eighty-eight fatal cases of mushroom poisoning were reported, 165 persons having been affected in the fifty-one places from which reports were received. A central organization to promote the cultivation and consumption of mushrooms has offered a prize for a series of photographs, pictures and negatives of mushrooms that can be used for teaching purposes. The headquarters of this organization, the Pilz- und Kräuterzentrale, are at Heilbronn a. N. The competition closes Nov. 20, 1920.

**The Medical Group in the French Legislature.**—The medical members of the French parliament hold regular meetings and have recently been able to influence legislation on public sanatoriums. The points on which they especially insisted were that the board of nine members which examines and classes candidates for posts as sanatorium physicians should include a representative of the medical school of the region, and a representative of the national medical association and of the national Union des syndicats médicaux. Also that a representative of the medical faculty should form one of the

superior board of five members. The supervision of the public sanatoriums is not to be left to public health officers but to form part of the duties of the professor of hygiene in the nearest medical school. The medical parliamentary group was also successful in its plea to have the salaries of sanatorium physicians 9,000 and 14,000 francs to start with.

### Deaths in Other Countries

Dr. **W. Wundt,** a pioneer in physiologic and experimental psychology, professor emeritus of philosophy at Leipzig after teaching physiology at Heidelberg and Zurich, aged 89.——Dr. **M. Valladão,** one of the founders of the Sociedade de Medicina e Cirurgia of S. Paulo, Brazil, and founder of the Polyclinica.—Dr. **L. Blau,** an otologist of Berlin, aged 72.——Dr. **H. Hecht,** an otologist of Munich, aged 52.——Dr. **M. Aparicio,** a leading physician and statesman of Guatemala, who served as intern in the Paris hospitals in the seventies, aged 79.——Dr. **G. Benasach y Espinosa,** a medicolegal expert at Havana, aged 72.——Dr. **J. D. Rueda** of Bogota.——Dr. **Mello Barreto** of S. Paulo, formerly of the public health service.——Dr. **J. de Araujo Bastian,** professor at the medical school of Porto Alegre, Brazil. The *Brazil-Medico* states that according to a telegraphic dispatch he was a victim of bubonic plague.

## Government Services

### Medical Officers Detailed for Postgraduate Courses

Announcement has been made by Surgeon-General Ireland that fifteen officers of the Medical Corps have been sent to leading universities of the United States and England to take postgraduate courses. The officers are to specialize in advanced subjects such as hygiene, surgery and others, and are assigned to the universities at the expense of the government on detached service. This is the first time that the Army Medical Corps has selected officers for postgraduate courses, such authority having been granted by the Army Reorganization Bill.

### Reserve Officers' Training Schools

Progress is being made by the Surgeon-General in his plans to establish reserve officers' training schools for medical officers at the ten leading universities of the country. Practically all the medical colleges designated by the Medical Corps have given the proposition a favorable reception and are awaiting action by their boards of trustees. Announcement of the names of the universities and the selection of medical officers to conduct the training courses are expected to be made within the next several weeks. Students attending these universities will be eligible to take the military course and become officers in the Medical Reserve Corps after graduation.

### Occupational Therapy Proves Successful

Reports from the tuberculosis sanatoriums operated by the U. S. Public Health Service demonstrate the value of occupational therapy in the treatment of discharged and disabled soldiers. As carried out by the reconstruction aides of the Public Health Service, occupational therapy, consisting of mental work and manual handicraft for curative and diversional purposes, has been very successful in the care and treatment of discharged and disabled soldiers by maintaining contentment among the patients. Out of 392 patients admitted to one sanatorium, 263 took occupational therapy and 129 did not. Of the former class, only two patients left the hospital against the advice of physicians in charge, while on the other hand, of the 129 who did not take occupational therapy, eighty-three either deserted or left the hospital against the advice of the physicians in charge. Over 300 aides, mostly women, are employed in occupational therapy and physiotherapy by the Public Health Service.

### Health Conditions in the Army

With the exception of malaria, the incidence of epidemic diseases decreased during the week ending September 24. One new case of pneumonia was reported from Aberdeen Proving Ground, one of influenza from the Sixth Corps Area, three of measles from Camp Jackson and one of dysentery from Fort McDowell. The admission rate for malaria was higher, it being reported in small numbers from many camps and stations. Camp Pike and the Eighth Army Corps Area led all other stations in the number of new cases, each reporting seven. The Brownsville district, from which formerly a large number of admissions were reported, had only one case from the command and one by transfer. The death rate for disease, 1.98, is considerably lower than in the preceding week, 3.5. Of the six deaths from disease, three resulted from tuberculosis, two from endocarditis and one from peritonitis. There were two deaths from pneumonia among the American forces in Germany.

## Foreign Letters

### LONDON

*(From Our Regular Correspondent)*

Sept. 18, 1920.

### First Report of the Ministry of Health

The first annual report of the newly created Ministry of Health is largely concerned with the costs of the various services, which are increasing to an enormous extent. The most important part deals with venereal disease. Upward of 98,000 cases were reported for the first time in 1919, but 15,500 of the patients were found not to be suffering from venereal disease. Attendances at the treatment centers numbered 1,003,000, as compared with 488,000 in 1919. Even allowing for the increased tendency to seek treatment and for the additional facilities provided, it is evident that venereal disease is not being prevented. The cost for the year ending March 31, 1919, was a little over $1,000,000, exclusive of grants for propaganda.

Tuberculosis is another disease that is proving costly, and statistics do not suggest that much headway is being made. To March 31, 1920, $2,200,000 has been paid and $4,500,000 promised in aid of institutions for treatment. This amounts to an increase of about 50 per cent. on the previous year. However, the statistics show a fall in the cases of tuberculosis:

INCIDENCE OF TUBERCULOSIS

| Number of notification: | 1918 | 1919 |
|---|---|---|
| Pulmonary | 79,025 | 67,123 |
| Other forms | 20,215 | 17,775 |
| Deaths: | | |
| Pulmonary | 46,077 | 36,662 |
| Other forms | 11,996 | 9,650 |

On child welfare the expenditure was $2,600,000, about double that of the previous year.

Attention is drawn in the report to the composition of egg and custard powders. About 1.5 per cent. of those on the market were found not to be genuine. One sample described as "Double Cream Custard, Extra Delicious and Creamy," proved to consist of 100 per cent. of tinted starch, without any trace of cream or eggs.

### An American's Impression of Guy's Hospital

Dr. Edward J. Wood, a member of the Association of American Physicians, has given his impressions of Guy's Hospital in the *Gazette* of that institution. He says that no greater inspiration in medical Europe is to be found than that of going through the matchless museum and actually handling the pathologic specimens placed there a century ago by the great teachers Addison, Bright, Hodgkin, Astley Cooper, Gull and Wilks. The kidneys of Bright, the suprarenals of Addison, the lymph glands of Hodgkin may well be the start of such an excursion. His feeling is that the place is by no means a mausoleum of ancient achievement, but that there are as many Addisons, Brights, Coopers and Hodgkins as there ever were and that in addition to the brilliant work of today there will soon appear another burst of medical glory. In the general work, nothing impressed him more than the close relation of the wards to the necropsy room and the

general practice of doing necropsies. Few deaths occurred without a necropsy. Indeed, the success in this respect was almost as great as what he saw in Müller's clinic in Munich. The practice of the assistant physicians in performing a portion of the necropsies was admirable, and he hoped that the plan would be instituted some day in America. The clerking privileges and opportunities were not excelled in any hospital with which he was familiar. But he would like to see more blood counting done in the wards. Although Guy's must be regarded as essentially a training place for undergraduates, he found it admirable for graduate medical work. The material in the wards as well as in the outpatient departments was seemingly limitless, and one could follow out any particular line of clinical research desired.

### Death After Arsphenamin Injections

Deaths following the use of arsphenamin injections continue to be recorded from time to time. An inquest has been held on a woman who contracted a chancre on her nose. The source of infection appeared to be some dirty rags which she removed from underneath a bath in an empty house. She was given three injections of 0.3, 0.3 and 0.45 gm. according to the recognized standard treatment. Five days after the last she became unconscious, and on the following day she died without regaining consciousness. A necropsy failed to determine the cause of death, and the organs were sent for analysis, with the result that a grain of arsenic was traced. The analyst expressed the view that the woman was unduly sensitive to the drug. Her friends had the satisfaction of hearing that the treatment had been the approved one.

### Death Due to Swallowing the Contents of a Golf Ball

An inquest has been held on a girl who died after swallowing some liquid in stripping the covering from a golf ball with her teeth. Analysis disclosed that the core of the ball was a liquid contained in a small rubber pouch. The liquid was strongly alkaline, and its basic principle was sodium silicate. Serious injury to the eye of a golfer through the inner core bursting on examining the construction of a ball has previously occurred in this country. Analysis of the contents by the *Lancet* revealed that the inner rubber pouch contained a fluid of high density which proved to be a strongly alkaline fluid consisting mainly of potash soap.

### A Chair of Industrial Medicine

A new departure in this country is the proposal to set up a chair of industrial medicine at St. Mary's Hospital. A number of influential persons, including professional leaders such as Sir Clifford Allbutt, Sir Almroth Wright and Sir Malcolm Morris, have signified their interest in the project. In this matter America is ahead of us. She has six chairs on the subject. It is proposed to train physicians in the care of the human machinery, as engineers are trained to look after machines.

## PARIS

*(From Our Regular Correspondent)*

Sept. 10, 1920.

### Congress of Alienists and Neurologists

The twenty-fourth Congress of Alienists and Neurologists of French-Speaking Countries was held recently at Strasbourg under the presidency of Dr. Dupré, clinical professor of mental diseases at the Paris medical faculty. Among other papers on the program, exophthalmic goiter was the subject of a very interesting discussion. The essayist, Dr. Gustave Roussy of Paris, has given special attention to a study of the lesions of the thyroid gland in this disease. He found that the fundamental change in the gland is a parenchymatous hyperplasia, and this alteration is so constant that Roussy concluded the pathogenesis of exophthalmic goiter to be an essential disease of the thyroid gland. Undoubtedly, during the war, cases of exophthalmic goiter developed after traumatism or emotional shock, and this lent support to the theory of a nervous or sympathetic origin of the disease; but Roussy thinks that these cases are extremely rare, or they were incompletely studied, and that they cannot overthrow the thyroid theory, which has firm support in the pathologic findings. So far as remedial measures are concerned, these should be directed to a reduction of the perverted hyperactivity of the gland, either by surgical intervention or by radiotherapy. For controlling the treatment, one should take advantage of the new facts obtained from determinations of the basal metabolism as developed by American investigators. Drs. Barré (Strasbourg) and Sicard and Sollier (Paris) never saw a single case of exophthalmic goiter induced by the emotions of war, while Dr. Briand (Paris) thought that the emotion is more often the effect and not the cause of the goiter, which may exist in latent form, especially in women. Dr. Crocq (Brussels), in spite of all this, believes that emotional causes may provoke the disease, and that the nervous element should be taken into account. Since this affection is much more rare in men than in women, it is not surprising that few cases were seen among soldiers.

### An International Institute of Anthropology

Several days ago there was held a preliminary meeting for the founding of an international anthropologic institute in Paris. Many French and foreign scientists, delegates from more than fifteen nations, attended the inaugural session held at the Ecole d'anthropologie. The United States was represented by Prof. Charles Peabody, of the Peabody Museum, Harvard University. The Institute of Anthropology, which will establish a permanent international office, will have as its principal functions the organization of anthropologic investigations in conformity with uniform plans, the encouragement of periodic general meetings, and the establishment of mutual relations among the scientists of various countries.

### Books for the Blind

The Valentin Haüy Association for the Welfare of the Blind has deposited in six municipal libraries of Paris a collection of special books printed in braille type, to be placed at the disposal of blind readers residing in the department of the Seine, under the same terms that govern the loans of the ordinary collections in the libraries. The books may be removed to the homes of the readers, and they will be replaced at intervals from funds provided by the Valentin Haüy Association.

### Strikes and the Practice of Medicine

In a preceding letter, reference was made to the protests of the physicians and surgeons of Bordeaux hospitals because of the difficulties placed in the path of the practicing physicians as a result of the strikes. This question of strikes, which has profoundly affected all economic walks as well as the medical profession, was the subject of discussion by the administrative council of the Syndicat des médecins of the department of the Seine. Certain physicians demanded that members of the syndicate refuse medical attendance to the strikers and their families. But this measure has not been approved, as the majority felt that the syndicate should not enter into political activities and should not take sides for or against strikes. Others remarked that by putting itself on a strictly professional plane, the syndicate has the right and even the duty to point out the difficulties placed in the way of the practice of medicine by the last strikes, especially that of the transportation workers, difficulties which endangered the public health, and which therefore interested not only the physicians but all the residents of Paris. There is just cause to request the public authorities to enforce the necessary

measures to facilitate the practice of medicine and to make it possible for physicians to respond to the calls of their patients. The subjoined resolution was adopted:

The administrative council of the Syndicat des médecins of the Seine, having ascertained the great difficulty which the strikes of the transportation workers has entailed in the practice of medicine by preventing the physician from responding to the appeal of the sick and wounded, calls the attention of the public authorities and of the professional syndicates concerned to the necessity of assuring the prompt transport of the physician to the patient's bedside under all circumstances.

### Award of Prizes by the Academy of Sciences

The Académie des sciences has awarded the L. Lacaze prize (10,000 francs) to Dr. Maurice Arthus, professor of physiology at the Lausanne medical faculty, in recognition of his important work. The Montyon prize (2,500 francs) was awarded jointly to Drs. Pierre Delbet, professor of clinical surgery at the Paris medical faculty, and Noel Fiessinger, for their work on the biology of war wounds. Drs. Auguste Marie and Levaditi received the Bréant prize (3,000 francs) for their studies on general paralysis; and the Barbier prize (2,000 francs) went to M. A. Berthelot of the Pasteur Institute for his researches on the intestinal flora.

The annuity of 5,000 francs from the Charles Bouchard fund for scientific research was assigned to Dr. Charles Vaillant in reward for his work in radiography, which resulted in a series of painful mutilations.

### An Appreciation of the American Medical Association

A long letter on the activities of the American Medical Association by Dr. Faxton E. Gardner, New York, has just been published in the *Gazette des hôpitaux*. The author states that the program of activities of the Association embraces everything that relates to medicine. The three most salient fields of activity of the American Medical Association are its scientific work, the campaign for the improvement of medical education, and the propaganda for veracity and honesty in the sale of pharmaceutic products. The author lays considerable stress on the rôle of the Association in raising the level of medical education in the United States. He says that the European who comes to the United States with the idea (common in some quarters) of the overwhelming superiority of the educational system of his own country will be rapidly undeceived. Medical education in the United States is today equal to that in any other country. Great progress has been made within the last fifteen years, and the most potent factor in this has been the American Medical Association. When the United States shall have a federal department of health and, as a natural consequence, many questions shall have been consolidated and have become national, the field of activity of the Association, already vast, will grow to an almost inordinate extent. He demonstrates what influence can be exerted for the cause of medicine by a large and strong medical organization.

## BERLIN

*(From Our Regular Correspondent)*

Sept. 10, 1920.

### Health Certificates and Marriage

The protracted attempts to induce betrothed persons to seek information regarding their physical condition before entering into matrimony have received renewed impetus in Germany from the legislation enacted within the last few years in America, Sweden and Norway. The protagonists of such legislation may be divided into two camps. The one group is in favor of legislative provision for compulsory examination of both candidates for matrimony, and apprisal of the respective parties of the reciprocal findings. The Munich Medical Society favored the appointment of special examiners for this purpose, who should be known as "Eheberater." Furthermore, this society approved of the interdiction of marriage in cases of the discovery of transmissible or heritable diseases. These extensive stipulations are opposed by members of the other camp, who adopt the view that the populace is not sufficiently well informed to permit such legal regulations and restrictions. It is justly feared that the majority of the populace will oppose such regulations and that the legal provisions would be only paper regulations. This conception is apparently based on the experiences gained in America, Sweden and Norway where it is currently reported so many evasions of the regulations occur that these are ineffectual in practice. For this reason certain medical, hygienic and sociologic societies of Berlin agreed that legislative enactments on the question should be waived for the moment, and that, instead, each state should pass the necessary ordinance making it obligatory on the marriage license bureaus to issue to prospective bridal couples and their parents a leaflet suggesting a physical examination.

It was objected against this plan that the desired purpose of discouraging marriage in the presence of a serious illness would not be attained at this late stage. There is undoubtedly much justification for this objection, but naturally no earlier occasion offers to suggest such a precautionary measure. On the other hand, it may be assumed that this procedure will deter at least some of the betrothed persons in the event that a serious illness is disclosed. Even though results of the examination do not prevent the marriage in an unfavorable case, the warning will have the effect of warding off dangerous sequelae. The mere suggestion of the expediency of a physical examination will advance the cause of personal and social hygiene. Several of the German states, Lübeck for instance, had introduced the system. The procedure has now been made a legalized matter through all Germany, through the action of the National Assembly which, in an amendment to the registration laws, ordained that the registrar shall issue to the betrothed and to all those whose consent is demanded by the law before the bans are announced, a circular calling attention to the importance of medical advice before entering into marriage. The national board of health shall determine the substance of the circulars.

### Suicide of Physicians

Professor Weintraud, chief of the division of internal medicine at the municipal hospital of Wiesbaden and former pupil of Naunyn and Gerhard, committed suicide several days ago. During and after the war, a number of prominent men have died under similar circumstances, including several important physicians. Among these were Prof. Adolf Schmidt, noted gastro-enterologist and director of the medical clinic at Bonn, Prof. Max Rothmann, Berlin, neurologist and pupil of Hermann Munk, noted for his experimental work on the decerebrate dog and ape, and Professor Lewandowsky, Berlin neurologist. All three committed suicide during the war. Professor Schmidt had a psychopathic taint, but before his death he repeatedly maintained that he could not survive Germany's misfortune. Professor Rothmann was deeply affected by the death of his eldest son on the battlefield.

## Marriages

SAMUEL RUSH MILLER, Knoxville, Tenn., to Miss Victoria Lucretia Jordan of Wabash, Ind., September 29.

LOUIS JOHN MATLOCK, Caruth, Mo., to Miss Callie Schram of Benton, Ill., August 27.

JAMES A. BECTON to Miss Jean Hardy, both of Nashville, Tenn., September 25.

NORMAN M. KEITH to Miss Edna Alexander, both of Toronto, August 31.

GLADYS LYDIA CARR, Fresno, Calif., to Mr. W. B. Patterson, September 14.

# Deaths

**Lewis Grenshaw Bosher** ⊕ Richmond, Va.; Medical College of Virginia, Richmond, 1883; aged 60; emeritus professor of practice of surgery and genito-urinary surgery in his alma mater; visiting surgeon to and one of the founders of Stuart Circle and Memorial hospitals, Richmond; a member of the American Association of Obstetricians and Gynecologists, American Surgical, Southern Surgical and Gynecological, and American Urological associations and American College of Surgeons; died suddenly, September 12, from organic heart disease.

**Isaac Kay,** Springfield, Ohio; Starling Medical College, Columbus, Ohio, 1849; aged 91; a member and in 1871 vice president of the Ohio State Medical Association; one of the organizers, for twenty years secretary, and for two terms president of the Clark County Medical Society; a practitioner of Springfield for more than sixty years; for nine years a member of the Springfield Board of Education, and at one time coroner of Clark County, died, September 20.

**John William McKemy,** Dayton, Ohio; Jefferson Medical College, Philadelphia, 1903; aged 44; a member of the Ohio State Medical Association; captain, M. C., U. S. Army, and discharged April 1, 1919; at one time coroner of Montgomery County, and police surgeon of Dayton; was instantly killed, September 13, when the automobile in which he was riding plunged over an embankment.

**John Aloysius Dillon,** Springfield and Holyoke, Mass.; University of Pennsylvania, Philadelphia, 1906; aged 42; a specialist in diseases of the eye, ear, nose and throat; a member of the American Academy of Ophthalmology and Oto-Laryngology, and New England Otological and Laryngological Association; died suddenly, September 12, from heart disease.

**Albert Johann Hahn,** Pattenburg, N. J.; Eclectic Medical College of the City of New York, 1880; College of Physicians and Surgeons, Boston, 1882; Dartmouth Medical School, Hanover, N. H., 1885; aged 67; a member of the Massachusetts Medical Society; died at his summer home, in Sharon, Vt., August 1, from cerebral hemorrhage.

**John Charles Reeve,** Dayton, Ohio; Cleveland Medical College, 1853; aged 94; a member and president emeritus of the Ohio State Medical Association; at one time vice president of the American Gynecological Society; died, September 15. He bequeathed his brain to Professor Wilder, Cornell University, for use in anatomic research.

**George Morewood Lefferts,** Katonah, N. Y.; College of Physicians and Surgeons in the City of New York, 1870; aged 74; clinical professor of laryngoscopy and diseases of the throat, 1874-1896; of laryngology and rhinology, 1896-1904, and since 1904 emeritus professor of laryngology in his alma mater; died, September 21.

**Adolph Gehrmann** ⊕ Chicago; Chicago Medical College, 1890; aged 52; emeritus professor of bacteriology and hygiene in the College of Physicians and Surgeons, Chicago; superintendent of food inspection and bacteriologist in the Chicago health department from 1894 to 1903; died, October 3, from tuberculosis of the larynx.

**J. Albert Hedrick,** Dalhart, Texas; Fort Worth (Texas) School of Medicine, 1901; aged 56; acting assistant surgeon, U. S. P. H. S., and on duty at Vera Cruz, Mexico; one of the American physicians engaged in the campaign against yellow fever in Mexico; died at Vera Cruz, September 26, from yellow fever.

**Charles T. Burchard,** Falls City, Neb.; Rush Medical College, 1879; aged 64; a member of the Nebraska State Medical Association; was found dead, September 14, from the effects of poison taken with suicidal intent, it is believed, while despondent on account of ill health.

**Arthur Gilbert Kessler,** Crookston, Minn.; Illinois Medical College, Chicago, 1903; aged 44; a member of the Illinois State Medical Society; physician in charge of the Sunnyrest Sanatorium, Crookston; died suddenly in that institution, September 10, from heart disease.

**P. K. Black,** Mount Carmel, S. C.; Atlanta (Ga.) Medical College, 1885; aged 64; died in University Hospital, Augusta, September 11, from injuries received August 23, when the automobile in which he was riding was struck by a train near Mount Carmel.

**Henry Carver Paist,** Philadelphia; Pennsylvania Medical College, Philadelphia, 1854; aged 87; a member of the Medical Society of the State of Pennsylvania; died in Germantown, September 21.

**John J. Miller,** St. Louis; St. Louis Medical College, 1864; aged 78; a member of Missouri State Medical Association; assistant surgeon in the Confederate Army during the Civil War; died, September 17.

**John F. Baerecke,** De Land, Fla.; University of Georgia, Augusta, 1899; aged 71; a member of the Florida Medical Association; died, September 12, from carcinoma of the bladder.

**Harry Huesten Long** ⊕ La Porte, Ind.; Rush Medical College, 1893; aged 58; for two terms coroner of La Porte County; died suddenly, September 13, from heart disease.

**Joseph Marshall Sterling,** Philadelphia; Medico-Chirurgical College of Philadelphia, 1912; aged 30; died in Mt. Sinai Hospital, September 24, from septic endocarditis.

**John Marcus Tracy,** Mound City, Mo.; Eclectic Medical Institute, Cincinnati, 1873; aged 82; a member of the Missouri State Medical Association; died, September 12.

**Walter Raleigh Hicks** ⊕ Menominee, Mich.; Bellevue Hospital Medical College, 1888; aged 55; died on a yacht, recently, while returning from a fishing trip.

**Martin L. Jarrett,** Jarrettsville, Md.; University of Maryland, Baltimore, 1864; aged 78; a veteran of the Civil War; died in Baltimore, September 23.

**Anna Mary Marshall,** Philadelphia; Boston University School of Medicine, 1879; aged 80; died in Lansdowne, Pa., September 20, from pneumonia.

**William S. Dodd,** Washington, Pa.; Cincinnati College of Medicine and Surgery, 1878; aged 74; died, September 19, from angina pectoris.

**Henri Alphonse Hamel,** Chicoutimi, Que.; Laval University, Quebec, 1896; aged 50; died, June 6, from atrophic cirrhosis of the liver.

**Frank H. Turner,** Frederic, Wis.; Keokuk (Iowa) Medical College, 1893; aged 53; died, September 21, from cerebral hemorrhage.

**William E. Foster,** Owenton, Ky.; Medical College of Ohio, Cincinnati, 1878; aged 64; died, September 18, from cerebral hemorrhage.

**Elmer D. Burch,** Long Lake, N. Y.; University of Vermont, Burlington, 1890; aged 53; died, September 22, from cerebral hemorrhage.

**Raymond W. Stough,** Beach, N. D.; University of Illinois, Chicago, 1905; aged 41; died at the Bismarck Hospital, September 13.

**Bernard N. Graeser,** Des Moines, Iowa; Hahnemann Medical College and Hospital, Chicago, 1878; aged 83; died, September 18.

**Hannibal McDuffy Little,** Boone, N. C.; College of Physicians and Surgeons, Baltimore, 1880; aged 63; died, September 10.

**Milo Avery,** Primghar, Iowa; Rush Medical College, 1884; aged 67; a member of the Iowa State Medical Society; died recently.

**William L. Penney,** Pittsburgh (license, Pennsylvania, 1881); aged 76; a veteran of the Civil War; died, September 16.

**Finley Young Hanna,** Wauchula, Fla.; Cincinnati College of Medicine and Surgery, 1880; aged 68; died, September 4.

**Reuben H. Andrews,** Philadelphia; University of Pennsylvania, Philadelphia, 1874; aged 70; died, September 17.

**Elisha Averett Jenkins,** Brooklyn (license, Virginia, 1897); aged 46; died at Saranac Lake, N. Y., September 18.

**Orman G. Gowin,** McCune, Kan.; Eclectic Medical Institute, Cincinnati, 1882; aged 60; died, September 2.

**Obediah H. Garrett,** Cadiz, Ind.; Indiana Medical College, Indianapolis, 1883; aged 61; died, September 18.

**John L. Slayden,** Dexter, Mo.; University of Louisville, Ky., 1879; aged 65; died recently.

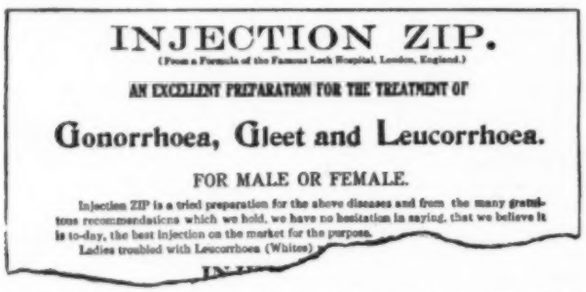
⊕ Indicates "Fellow" of the American Medical Association.

# The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE FRAUD ON THE PUBLIC AND ON THE PROFESSION

## MORE MISBRANDED VENEREAL NOSTRUMS

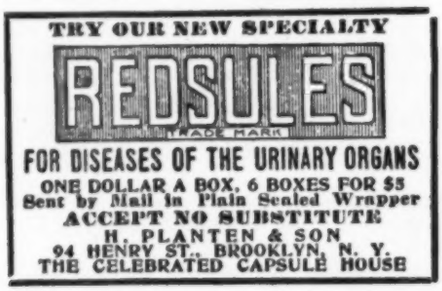
**Injection Zip.**—The Baker-Levy Chemical Co., Indianapolis, Ind., shipped in April, 1919, a quantity of "Injection Zip" from Indiana to Ohio. The stuff was labeled as an effective


INJECTION ZIP.
(From a Formula of the Famous Lock Hospital, London, England.)
AN EXCELLENT PREPARATION FOR THE TREATMENT OF
Gonorrhoea, Gleet and Leucorrhoea.
FOR MALE OR FEMALE.
Injection ZIP is a tried preparation for the above diseases and from the many gratuitous recommendations which we hold, we have no hesitation in saying, that we believe it is to-day, the best injection on the market for the purpose.
Ladies troubled with Leucorrhoea (Whites)

treatment for gonorrhea, gleet and leucorrhea. The federal chemists reported that analysis showed it to consist essentially of acetates and sulphates of zinc and lead, opium, berberin, plant extractives, alcohol and water. The therapeutic claims made for the product were declared false and fraudulent. In June, 1919, the court entered judgment of condemnation and forfeiture and ordered the stuff destroyed.—[*Notice of Judgment No. 7359; issued August 31, 1920.*]

**Three Days Cure.**—In May, 1919, the "3 Days" Cure Co., Washington, D. C., shipped a quantity of this product, which was alleged to be a "prompt and reliable remedy for Gonorrhea and Gleet." The federal chemists reported that the stuff consisted essentially of zinc sulphate, boric acid and water. The therapeutic claims were declared false and fraudulent. In June, 1919, the court entered judgment of condemnation and forfeiture and ordered the stuff destroyed.—[*Notice of Judgment No. 7356; issued August 31, 1920.*]

**Redsules.**—A quantity of this article consigned by H. Planten & Son, New York, was shipped in August, 1917. The Bureau of Chemistry reported that analysis showed the article to consist essentially of oil of santal, copaiba and methyl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REDSULES
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salicylate. The product was represented as "for the treatment of Private Diseases of Men" and for "Affections of the Genito-Urinary Tract, Gonorrhea, Gleet, Inflammation of the Bladder. . . ." The curative effects claimed for the article were declared false and fraudulent. In June, 1919, no claimant having appeared, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 7430; issued Sept. 13, 1920.*]

**Blakes Capsules.**—A quantity of this product alleged to have been shipped in February, 1919, by Henry K. Wampole & Co., Philadelphia, was declared misbranded. The federal chemists reported that the capsules contained essentially a tablet of salol suspended in a mixture of volatile oils, oleoresins and plant extractives, including copaiba and cubebs. The capsules were labeled "For Gonorrhea, Gleet, Chronic Seminal and Mucous Discharges." It was declared misbranded because the therapeutic claims were false and fraudulent. In July, 1919, no claimant having appeared judgment of condemnation and forfeiture was entered and the court ordered the product destroyed.—[*Notice of Judgment No. 7427; issued Sept. 13, 1920.*]

**Compound Extract of Cubebs with Copaiba.**—The Tarrant Co. of New York City shipped in September, 1918, a quantity of this product which was labeled in part:

"A valued medicine for Gonorrhea, Gleet, Whites, etc."

"Specially Prepared for the Treatment of Gonorrhea, Gleet, and simple Whites or Leucorrhea, . . . disorders of the kidneys, bladder, prostate, vagina and urethra in which these drugs have proved their usefulness."

Analysis of a sample made in the Bureau of Chemistry showed it to consist essentially of cubebs, copaiba, and magnesium oxid. The curative claims were declared false and fraudulent. No claimant appearing, the court, in January, 1920, entered judgment of condemnation and forfeiture and ordered the product destroyed.—[*Notice of Judgment No. 7289; issued Aug. 16, 1920.*]

**Santal Midy Capsules.**—E. Fougera & Co., New York, shipped in May, 1919, a quantity of this product into Maryland. The federal chemists reported that the globules contained essentially oil of santal of an average content of 0.2 grams. The product was declared adulterated because of a shortage from the declared weight of 19 per cent. It was

declared misbranded because it was falsely branded as to the country in which it was manufactured, it being labeled in prominent type in French "House of Grimault & Co., . . . Paris," which misbranding was not corrected by the statement in small type "Bottled in the New York Laboratories by Dr. Ph. Chapelle." Furthermore, the curative and therapeutic claims made for the treatment of gonorrhea, gleet, etc., were declared false and fraudulent. In September, 1919, the court entered judgment of condemnation and forfeiture and ordered the product destroyed.—[*Notice of Judgment No. 7400; issued August 31, 1920.*]

## THE BETHLEHEM LABORATORIES EXPLAIN

In this department of THE JOURNAL for August 14 there was discussed the proposition that had been made to a number of physicians by the Bethlehem Laboratories, Inc. Briefly, it was to the effect that this company had "decided to allow one thousand of the leading physicians a three-day option to purchase four shares of the 8 per cent. Cumulative Preferred stock, $400.00." The circular sent to physicians also stated that the Bethlehem Laboratories "controls the manufacture of Hyclorite." This preparation, as our readers know, is made by the General Laboratories, Madison, Wis., and has been accepted by the Council on Pharmacy and Chemistry for inclusion in N. N. R.

Since the article was published THE JOURNAL has received a communication from the president of the General Laboratories, who is also vice president of the Bethlehem Laboratories, explaining how the Bethlehem Laboratories happened to be put in this unfavorable light. It seems that the Bethlehem Laboratories is a sales and distribution organization

for Hyclorite, while the General Laboratories manufactures the product. While the entire policy of publicity in the exploitation of Hyclorite was supposed to be subject to the approval of the General Laboratories, the instance to which THE JOURNAL took exception was, apparently, an unauthorized act on the part of an authorized agent. In the communication previously referred to, this incident is thus explained:

"Now the fact is, that a certain amount of preferred stock, together with a plain business statement, approved by both of our corporations, and by corporation attorneys of very high standing, were placed in the hands of a broker to be offered by him, presumably to his regular business clientele, and the broker evidently prepared and sent other matter, including letters, to physicians, without any knowledge or approval whatsoever on our part, and contrary to instructions that all proposed letters and other publications used by them should first bear our written approval before being used. The broker presumably is not familiar with the ethics of the medical association, nor was it necessary for him to be, if he had simply adhered to the agreement under which the business was entrusted to his hands.

"The officers of General Laboratories and Bethlehem Laboratories both regret the blunder and agree fully with you as to the impropriety of permitting the solicitation of members of the medical profession. The broker was immediately stopped as soon as it was discovered what had happened, and I am authorized to say to you on behalf of both companies that so far as lies within our power, nothing shall be permitted or done with respect to Hyclorite, which does not conform in every particular to clean, approved ethics, both professional and in a business way."

# Correspondence

## ACETONE AS A DECOLORIZER IN GRAM'S STAINING METHOD

*To the Editor:*—With the increasing cost of alcohol and the difficulty of obtaining the pure substance, the following uses of acetone for alcohol may prove of interest. Available literature does not mention them, but they are so simple that acetone must have been used in this manner before.

The current local price of medicated 95 per cent. alcohol is $1.60 per pint, and absolute alcohol cannot be purchased locally. In place of alcohol, acetone 50 cents per pint, kept dehydrated with calcium chlorid, has been used for tissue work not only for dehydrating preparatory to embedding in paraffin in the usual manner, but also for passing from xylene to water and hematoxylin and thence from water to xylene again in staining sections on slides. The results are very satisfactory, and with a small amount of eosin in the last acetone, counterstaining and dehydration are accomplished in one step.

Gram's method of staining shows variations in results, depending on the amount of time used in decolorizing by the alcohol as well as by the length of time that the stains are applied. That the method is open to variations in results and can be performed by various technics is shown by the two methods recommended by the Committee on the Descriptive Chart of the Society of American Bacteriologists (*Journal of Bacteriology* **4**:112, 1919) and the unwillingness of the committee to adopt a standard without more investigation. The committee recommends absolute alcohol in each case as a decolorizer.

For some unknown reason, acetone was tried as a decolorizer for Gram's method, the first slide being a prostatic smear containing numerous pus cells and secondary invading pus cocci. The rapidity and completeness with which the gentian violet-iodin compound was washed out of the pus cells was remarkable; but the pus cocci retained the stain perfectly. This method of decolorization has been used ever since with much satisfaction. In order to check results, smears for Gram's staining are made on slides containing colon bacilli on one end and staphylococci on the other. The results checked in this way have been perfect. The acetone gives quicker and more complete decolorization of gram-negative bodies than does alcohol, as it is sufficient to flood the slide a few times with acetone, about five to ten seconds, to bring about decolorization. The quickness of decolorization, aside from the cheapness of acetone over alcohol, has much to recommend the method. The gentian violet used is a formaldehyd mixture, which appears to keep indefinitely (gentian violet, 4.8; alcohol, 100; formaldehyd solution, 15; water to 400). The iodin solution is the usual 1, 2, and 300 combination of iodin, potassium iodid and water. The counterstain used is safranin (safranin, 1; alcohol, 25; water to 200). The stains and the iodin are applied about one minute each.

Acetone is also useful in drying pipets and syringes, instead of the usual two washings with alcohol and ether.

M. W. LYON, JR., M.D., South Bend, Ind.

## "CREDULITY AND CURES"

*To the Editor:*—According to the concluding lines of Dr. Isador H. Coriat's communication (THE JOURNAL, Sept. 25, 1920, p. 892), "psychanalysis is based on the fundamental principle that its practice and technic must be directed toward that unconscious thinking which forms the basis of every neurosis." Who told the psychanalysts that unconscious thinking formed the basis for every neurosis? Was it Virchow, perhaps? Virchow, the liberator of medicine from mysticism, told us that an objective cause lay behind every subjective symptom. Some of us surgeons believe that Freud as a mystic has set medicine well back toward the middle of the last century, a sort of blight that comes over our profession from time to time. When we dispose of a neurosis that has been precipitated by some peripheral irritation or focal infection and do this in a pragmatic sort of way with a jackknife, we are prone to conclude that any unconscious thinking in the case must have been done by the wily microbe. I admit that when a patient has dreams after eating Welsh rabbit at night there may be something in the repressed wish idea, a repressed wish that quail on toast had been eaten instead of the rabbit. The repression in this case, however, would relate to the fact that the dreamer couldn't afford to pay for quail.

ROBERT T. MORRIS, M.D., New York.

## "TETANY FOLLOWING FORCED RESPIRATION IN MAN"

*To the Editor:*—In THE JOURNAL, September 11, p. 746, is an editorial on "Tetany Following Forced Respiration in Man." As the work of Grant and Golden, which you quote, is in large measure confirmatory of the results published by Collip and Backus in the April issue of the *American Journal of Physiology*, I take it that through some oversight that paper has been overlooked. So far as I am able to ascertain, it contained the first account of definite tetany following forced respiration.

J. B. COLLIP, PH.D., Edmonton, Canada.

# Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

## ESTIMATION OF KIDNEY FUNCTION WITH PHENOLSULPHONEPHTHALEIN METHOD

*To the Editor:*—1. Please describe the laboratory method in detail for estimating the phenolsulphonephthalein excretion when this substance is given intravenously and the urine is collected through the ureteral catheter for two fifteen minute periods.

2. What is the normal output of phenolsulphonephthalein for the first and second fifteen minute periods, when the urine is collected through the ureteral catheter?

Please omit my name and address. L. M. P.

ANSWER.—1. While phenolsulphonephthalein for the purpose of testing the kidney function may be injected intra-

venously, the intramuscular injection into the lumbar muscles is ordinarily preferred. It may also be injected subcutaneously. Six mg. of the drug is injected. The solution may be obtained in ampule form ready for use, or it may be prepared by diluting 0.6 gm. of the substance and 0.84 c.c. of double normal sodium hydroxid solution to 100 c.c. with 0.75 per cent. sodium chlorid solution, and then adding 0.15 c.c. of double normal sodium hydroxid solution. The solution is then filtered. The filtrate contains 0.6 mg. of phenolsulphonephthalein to the cubic centimeter. From twenty to thirty minutes before the injection is given, the patient receives from 200 to 400 c.c. of water to insure sufficient diuresis. If desired, the bladder may be emptied by catheter. If the urine is to be taken directly by ureteral catheterization to determine the function of the individual kidney, the usual antiseptic precautions must be observed to avoid the possibility of infection of any part of the urinary tract. When the bladder has been emptied thoroughly, the phenolsulphonephthalein is injected and the time noted. When an intravenous injection has been given, the urine may be collected for two separate fifteen minute periods and at the end of one hour, the time of collection beginning with the appearance of the drug on the first side. Thus, information as to the function of the kidneys may be obtained quickly, if necessary. Following the intramuscular injection, after the appearance of the color the patient urinates at the end of one hour into one receptacle and again at the end of the second hour into another receptacle.

Both samples are rendered strongly alkaline with an amount of 25 per cent. sodium hydroxid solution sufficient to bring out the maximum of color (a fine purplish red), and the time of its appearance is noted. The amount of phenolsulphonephthalein is then determined colorimetrically either by the aid of a Duboscq instrument or the Rountree and Geraghty modification of the Hellige colorimeter. In the absence of a colorimeter, fairly accurate results may be obtained by placing a measured quantity of the alkalinized urine in a test tube and comparing the color with a tube containing a known quantity of the drug and diluting the latter until the colors match, when the percentage eliminated is ascertained.

2. Under normal conditions the time of appearance of the drug varies between five and eleven minutes. After intramuscular injection the elimination of the first hour is between 40 and 60 per cent. and that of the second hour between 20 and 25 per cent. The average normal eliminations following intravenous injection are from 35 to 45 per cent. in fifteen minutes; from 50 to 60 per cent. in thirty minutes, and from 65 to 80 per cent. in one hour.

### AMOUNT OF SPACE REQUIRED IN A BABIES' HOSPITAL

*To the Editor:*—How many cubic feet of space are required for each baby in a babies' hospital? Where shall I find plans for an ideal babies' hospital? E. C. D.

ANSWER.—The space required for each baby in a ward or room varies from 500 to more than 800 cubic feet. Eight hundred is the average requirement for adults. From 500 to 800 cubic feet should be a fair estimate for children from nursing age to puberty. If space in the whole hospital is meant, the requirement will doubtless be in the neighborhood of 5,000 cubic feet per patient, varying with the proportion of private rooms, also with the amount of room devoted to the laboratory, laundry, kitchens, examination and dressing rooms, etc.

Any hospital architect will furnish plans and assist prospective builders in all the problems connected with plans, construction, finish and equipment.

Edward F. Stevens, 9 Park Street, Boston, and Richard E. Schmidt, Garden and Martin, 104 South Michigan Avenue, Chicago, are among those who have made a specialty of planning hospitals, including children's hospitals.

Following are names of some architects and children's hospitals which they planned:

Windsor Saule, Santa Barbara, Calif.: Maternity pavilion of the glass inclosed nursery for Cottage Hospital, Santa Barbara, Calif.

Kenyon and Maine, Minneapolis: Children's pavilion of the Abbott Hospital, Minneapolis.

Hamilton W. Rogers, Lynn, Mass.: Children's Hospital, Lynn, Mass.

Charles A. Coolidge, Boston: Children's Hospital, Boston.

S. Hunt and S. R. Burns, Los Angeles: Children's Hospital, Los Angeles.

Mauran, Russell and Crowell, St. Louis: St. Louis Children's Hospital.

Proudfoot, Bird and Rawson, Des Moines, Iowa: Children's building of the Iowa State University, Iowa City.

## *Medical Education, Registration and Hospital Service*

### COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 9-10. Sec. Reg. Bd., Dr. F. J. Stout, Brinkley. Sec. Electic Bd., Dr. C. E. Laws, Ft. Smith.

CALIFORNIA: Sacramento, Oct. 18-21. Sec., Dr. C. B. Pinkham, 529 Forum Bldg., Sacramento.

CONNECTICUT: Hartford, Nov. 9-10. Sec. Reg. Bd., Dr. Robert L. Rowley, Hartford.

CONNECTICUT: New Haven, Nov. 9. Sec. Homeo. Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Sec. Eclectic Bd., Dr. James E. Hair, Bridgeport.

DISTRICT OF COLUMBIA: Washington, Oct. 12-15. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington.

FLORIDA: Jacksonville, Nov. 4. Sec., Homeo. Board, Dr. George A. Davis, Sec., East Port.

GEORGIA: Atlanta, Oct. 12-14. Sec., Dr. C. T. Nolan, Marietta.

KANSAS: Topeka, Oct. 12-13. Sec., Dr. H. A. Dykes, Lebanon.

LOUISIANA: New Orleans, Nov. 2. Sec., Homeo. Board, Dr. F. H. Hardenstein, 702 Macheca Bldg., New Orleans.

LOUISIANA: New Orleans, Dec. 2-4. Sec., Dr. E. W. Mahler, 1551 Canal St., New Orleans.

MAINE: Portland, Nov. 9-10. Sec., Dr. Frank W. Searle, 140 Pine St., Portland.

MICHIGAN: Lansing, Oct. 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

NEBRASKA: Lincoln, Nov. 11-12. Sec., Mr. H. H. Antles, Lincoln.

NEVADA: Carson City, Nov. 1. Sec., Dr. Simeon L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 19-20. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, Oct. 11-12. Sec., Dr. R. E. McBride, Las Cruces.

OKLAHOMA: Oklahoma City, Oct. 13-14. Sec., Dr. Jas. M. Byrum, Shawnee.

PHILIPPINE ISLANDS: Manila, Oct. 11. Sec., Dr. Fortunato Pineda, 610 Rizal Ave., Manila.

SOUTH CAROLINA: Columbia, Nov. 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TEXAS: Dallas, Nov. 16-18. Sec., Dr. Thomas J. Crowe, 617-20 Trust Bldg., Dallas.

WEST VIRGINIA: Charleston, Oct. 12. Sec., Dr. S. L. Jepson, Charleston.

### State Hospital Committee in Wisconsin Made Permanent

At the annual meeting of the Wisconsin State Medical Society, September 8, the house of delegates voted to make permanent its committee on hospitals and appropriated a sum of money to enable the committee to extend the work of inspecting the hospitals of that state. The members of the committee and the terms which they have been reappointed to serve are as follows: Dr. L. F. Jermain, Milwaukee, five years; Dr. L. E. Fazen, Racine, four years; Dr. F. S. Wiley, Fond du Lac, three years; Dr. J. V. R. Lyman, Eau Claire, two years; Dr. F. G. Connell, Oshkosh, one year. The committee's report to the Council on Medical Education and Hospitals of the American Medical Association showed that during the last year 110 hospitals in Wisconsin had been inspected. This makes a total of more than 1,800 hospitals inspected and reported by the hospital committees of the various state medical associations. The State Medical Society of Wisconsin is the first state society to vote a definite appropriation to cover the expenses of its committee on hospitals.

### Indiana Reciprocity Report

Dr. W. T. Gott, secretary, Indiana State Board of Medical Registration and Examination, reports that 46 candidates were licensed by reciprocity from January 1 to July 1, 1920. The following colleges were represented:

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Atlanta College of Physicians and Surgeons | | (1912) | Georgia |
| Bennett Medical College | | (1912) | Illinois |
| Chicago Coll of Med. and Surgery | (1912), (1913), (1913), (1914), (1915) | | Illinois |
| College of Physicians and Surgeons, Chicago | | (1912) | Illinois |
| Hahnemann Med. Coll. and Hosp. Chicago | (1914), (1917) | | Illinois |
| Loyola University School of Medicine | | (1916), (1918) | Illinois |
| Rush Medical College | | (1910), (1917) | Illinois |
| Northwestern University | | (1900), (1908) | Michigan-Utah |
| Univ. of Ill. | (1911), (1913), (1914), (1916), (1919, 2) | | Illinois |
| Indiana University School of Medicine | | (1909) | Ohio |
| Kentucky School of Medicine | | (1894) | Kentucky |
| Univ. of Louisville | (1893), (1900), (1908), (1914) | | Kentucky |
| University of Kansas | | (1911) | Kansas |
| College of Physicians and Surgeons, Baltimore | | (1892) | Illinois |
| Johns Hopkins University | | (1913) | Illinois |

| | | |
|---|---|---|
| University of Maryland | (1915) | W. Virginia |
| Barnes Medical College | (1899) | Illinois |
| Ensworth Medical College | (1909) | Missouri |
| University of Michigan Homeopathic Med. College | (1918) | Michigan |
| University of Michigan Medical School | (1917) | Michigan |
| University and Bellevue Hospital Medical College | (1915) | New York |
| Leonard Medical School | (1906) | Texas |
| University of Cincinnati | (1913) | Kentucky |
| Miami Medical College | (1906) | Ohio |
| Starling-Ohio Medical College | (1908) | Ohio |
| Western Reserve University | (1914) | Ohio |
| University of Pennsylvania | (1909 2) | Penna. |
| Meharry Medical College | (1913) | Tennessee |
| Tennessee Medical College | (1905) | Tennessee |

## Book Notices

AMERICAN MEDICAL BIOGRAPHIES. By Howard A. Kelly, M.D., LL.D., F.A.C.S., and Walter L. Burrage, A.M., M.D. Cloth. Price, $15. Pp. 1320. Baltimore: The Norman, Remington Company, 1920.

The first edition of this book was published in two volumes in 1912 as the "Cyclopedia of American Medical Biographies"; it contained biographic notices of 1,184 physicians and scientists. From the new edition, fifty-one of these biographies have been deleted; practically all of the remainder have been revised and corrected, and 815 new biographies have been added; the present volume thus contains 1,948 biographic sketches. All of the physicians whose biographies are included were residents of the United States and Canada. The principle of selection has been to include the names of all the deceased physicians who contributed to the advancement of medicine or who became illustrious in other fields. The biographies have been written by various authors; as a result, there is an unevenness of quality and style. Some of the sketches are almost as staccato as the notices in "Who's Who"; others are good examples of literary style; some are confined to repetition of scientific, literary or political achievement; others are fascinating because of their personal tone, numerous anecdotes and quotations. We do not deem it worth while to call attention to a few minor errors; however, it may be well to mention that in the biography of Christian Fenger, it is pointed out that Billings attended him in his last illness, and a "q. v." directs the reader to the latter's biography. The reference, however, is to John Shaw Billings. It was Dr. Frank Billings who attended Dr. Fenger, and he fortunately, is still among the living. Among the more interesting biographies are those of William Beaumont, John Shaw Billings, Daniel Brainard, Ephraim Cutter, Oliver Wendell Holmes, James Jackson, Walter Reed, Nicholas Senn, Caspar Wistar and Weir Mitchell. This book represents a great deal to American medicine in a historical way, since it places on record the names and works of many men whom a too material public might quickly forget. The authors are to be commended for the industry which the issuing of such a book involves, and also for its general excellence.

THE MECHANISM AND GRAPHIC REGISTRATION OF THE HEART BEAT. By Thomas Lewis, M.D., F.R.S., F.R.C.P., Physician of the Staff of the Royal Medical Research Committee. Cloth. Price, $16. Pp. 452, with illustrations. New York: Paul B. Hoeber, 1920.

Students of cardiology will be glad to know that Thomas Lewis has brought out a new edition of his "Mechanism of the Heart Beat." Published eight years ago, the book, together with "Clinical Disorders of the Heart" and many articles embodying the results of his fruitful investigations, has given to Lewis a position and reputation as an expert on the heart second to that of no other man. In this new edition, which is really a new book with its rearrangement, modifications and numerous additions, there is seen that clear and direct way of putting things that Lewis possesses to such an unusual degree. But no matter how well he might be able to handle the English language, he could not make such a presentation of the subject if he were not its complete master. His very positiveness and dogmatic way of stating an opinion make for clarity. We make no pretense of reviewing his work; this is a mere notice. But we have no hesitation in saying that it is the best book on this subject that is in print. It is up to date, scholarly, scientific.

## Social Medicine and Medical Economics

### SOME UNSETTLED LEGAL QUESTIONS IN NARCOTIC PRACTICE

ARTHUR D. GREENFIELD
Attorney and Counselor at Law
NEW YORK

The Harrison Narcotic Law has been considerably clarified by court decisions within the last few years, but there are still a number of points that are left in doubt, and some in actual confusion through conflicting decisions. It may be of interest to state a few of the more important questions and refer to some of the decisions in point.

In view of the action of the American Medical Association at its annual session in "emphatically condemning" the ambulatory treatment of drug addiction, perhaps the most interesting of these questions is the legal status of the ambulatory treatment. This so-called treatment consists in prescribing or dispensing opiates or cocain to addicts for self-administration over varying periods of time. Its legality when used as a treatment intended for the cure of addiction by a progressively reduced dosage was tacitly recognized by a regulation of the Commissioner of Internal Revenue, known as T. D. 2200, issued in May, 1915. The Supreme Court in March, 1919, handed down two decisions[1] which led the commissioner to revoke this ruling in July, 1919, by T. D. 2879. The latter ruling was at the time understood by many to amount to a prohibition of prescribing or dispensing more of the drugs than was necessary to meet the immediate needs of a patient. It had, however, no such effect in itself, leaving that question to be determined by the courts as a matter of construction of the Harrison law.

Since that time the practical construction of the law adopted by the federal district courts in trials of physicians has been such as to make the good or bad faith of the physician the sole criterion of his guilt or innocence. The judges have usually charged the juries that if the physician on trial honestly intended to cure or benefit the patient by prescribing or dispensing narcotics, he must be acquitted. The prosecution has usually placed medical experts on the witness stand to prove that the ambulatory treatment was not a method calculated to cure or benefit patients, and that it was not recognized or approved by the medical profession in general. This testimony, however, has not been conclusive, since even if the jury believed it to be true, it might also feel that the defendant physician honestly believed the contrary. Under the construction adopted by the trial courts, a physician might be well aware that the ambulatory treatment was generally disapproved by the profession, and was generally considered worthless as a therapeutic treatment, but could not be convicted for employing it unless the jury was convinced beyond a reasonable doubt that he himself disapproved it and considered it therapeutically worthless.

It will be readily understood from the foregoing that the Harrison law, as construed by the trial courts, is not effective in preventing practices which do not conform to recognized medical standards, in the sense in which certain other laws are effective. For example, Christian scientists have been successfully prosecuted for failing to give proper treatment to their children in cases of diphtheria, even though it was undisputed that they honestly believed in the efficacy and propriety of the Christian science treatment. In civil suits for malpractice, damages can be recovered from a phy-

1. U. S. v. Doremus, 249 U. S. 86; Webb et al. v. U. S., 249 U. S. 96.

sician for failure to use ordinary skill in accordance with recognized professional usage, and he cannot successfully defend such suits by proving his ignorance, or the holding of peculiar views. Whether the defect is in the text of the Harrison law, or is due to a mistaken construction by the lower courts, is an open question. Last year I pointed out[2] that a judicial construction of the law holding the ambulatory treatment to be illegal in itself, regardless of the intent of the physician practicing it, would be entirely in harmony with the decisions of the Supreme Court cited above, as well as with general principles of legal construction. No case involving this question has yet reached the Supreme Court, however, and until the question is presented to that court, or the act amended to cover the point, the construction adopted by the district courts will probably continue to prevail.

Another doubtful question is whether a physician who prescribes these drugs in bad faith, for the admitted purpose of gratifying the craving of an addict, and without any intention of cure, can be convicted in case the prescriptions are innocently filled by a druggist between whom and the physician there is no collusion. The Harrison law does not specifically forbid prescribing, but only the sale, bartering, exchange or giving away of the drugs. In a case in which a physician was indicted for selling in the circumstances set forth above,[3] the circuit court of appeals held that the act of the physician could not be considered a sale, and therefore his conviction could not be sustained. In a similar case,[4] the district court held that he was guilty of selling within the meaning of the law. The latter case has been appealed, but has not yet been reached for argument in the Supreme Court. It has been thought that if the view taken in the former case is correct, a conviction might be secured by indicting the physician, not for selling, but for aiding and abetting the druggist who made the sale. A recent opinion in the circuit court of appeals, in a case arising on such an indictment,[5] intimates very clearly that the physician cannot be convicted under this form of indictment if the druggist who filled the prescription did so innocently. This decision is presumably based on the view that a person cannot be guilty of being an accessory to a crime unless the principal has committed the crime. If the Supreme Court should ultimately sustain this view, and should also hold that the issuance of a prescription, thereafter filled, is not a sale, it would be necessary to amend the law so as to make the issuance of an improper prescription an independent crime.

In connection with the case last mentioned, holding that a druggist filling a prescription must be guilty in order to support the conviction of the physician issuing it for aiding and abetting the sale, it may be well to note that the court held that the guilt of the druggist could be inferred from the fact that he had filled a number of prescriptions for the same patients for large amounts of drug, extending over considerable periods without substantial reduction, and that some of the prescriptions were evidently for addicts. The proposition that guilty knowledge, whether expressly proved, or implied in the manner indicated, was necessary to make the druggist guilty of unlawful sale is not supported by all the decisions, and in fact seems directly opposed to some decisions of equal authority. The Harrison law forbids sales to consumers except on a prescription; the Webb case, cited above, holds that a prescription written by a physician for other than legitimate therapeutic purposes is not a prescription within the meaning of this exception. In a case arising under a statute forbidding the sale of liquor to Indians,[6] the circuit court of appeals held that one selling to an Indian was guilty even though he had no knowledge that his customer was an Indian, and in fact honestly believed him to be a Mexican. It is an open question, therefore, whether a druggist filling a prescription of the character declared by the Supreme Court not to be a prescription is not guilty even though he honestly believes it to be a prescription; but until this question is specifically passed upon by the Supreme Court, the decision that guilty knowledge is requred for conviction in the case of a druggist will probably be followed by the lower courts.

A question that is of considerable importance in the state of New York, and may arise in other states having similar laws, is as to the effect of the conviction of a physician for violation of the Harrison law on his right to practice. The Public Health Law of New York declares that conviction of a felony shall automatically operate as a forfeiture of a physician's license to practice medicine. Under the federal jurisdiction, violation of the Harrison law constitutes a felony; but the state law defines a felony as a crime punishable by imprisonment for a specified period in a state prison. As those convicted of federal felonies and sentenced to imprisonment for the time specified are confined in a federal prison, the question has been raised whether the state law covers such a case, and this question has not been passed upon by the courts, so far as known.

Of course, all sorts of questions may arise under state statutes, and it would not be of general interest to discuss them; but a decision of the highest court of New York rendered last year is worthy of comment, since it is based on principles of law generally applicable. In this case[7] the court held that a parent could recover damages for the loss of services of her minor son from a druggist who had continuously sold heroin to him, and by thus catering to his addiction had kept him in a condition unfit for work. The facts occurred before the passage of the Harrison law, and at a time when the state law merely provided that none of the poisonous drugs specified should be delivered by a retailer "until he has satisfied himself that the purchaser is aware of its poisonous character and that the poison is to be used for a legitimate purpose." Since the facts were held to constitute a violation of this statute by the druggist, and also to furnish sufficient ground for a civil suit, there can be no doubt that now, since the passage of the Harrison law and of more stringent statutes in most of the states, such suits could be maintained against physicians and druggists who supply drugs to addicts under legal age.

While not of special interest to physicians, the question of whether possession of drugs illegally obtained can be made the basis of criminal action under the Harrison law is one of some importance with reference to the enforcement of this law. By an amendment to Section 1 of the law passed last year, an attempt was made to forbid the purchase, as well as sale, of these drugs without a prescription or order form. Possession of the drugs without appropriate internal revenue stamps was declared to constitute prima facie evidence of illegal purchase. The validity of this amendment has not yet been passed upon by any of the higher courts, but an interesting question suggests itself as to whether, if sustained, it might not prove unfortunate as a matter of policy. Evidence against illegal sellers is usually presented through the testimony, under subpena, of addicts who have bought from the defendants. This testimony is in many cases unwillingly given, as the addicts are generally friendly to their sources of supply; but they can be forced to testify under threat of punishment for contempt.

2. Greenfield, A. D.: Some Legal Aspects of the Narcotic Drug Problem, New York M. J. **110**: 100 (July 19) 1919.
3. Foreman v. U. S., 255 Fed. 621.
4. U. S. v. Jin Fuey Moy, 253 Fed. 213.
5. Doremus v. U. S., 262 Fed. 849.
6. Feeley v. U. S., 236 Fed. 903.
7. Tidd v. Skinner, 225 N. Y. 422.

If, however, their testimony would tend to prove themselves guilty of crime, they would have a constitutional right to refuse to testify; the result might be that by making it possible to convict unlawful purchasers, the amendment would make it more difficult to get legal evidence against unlawful sellers.

As presented, some of the questions that have been discussed in this paper may seem to raise serious doubts of the practical efficiency of the Harrison law. It should be remembered, however, that sooner or later they will presumably all be passed upon by the Supreme Court, and that body may confidently be expected to render decisions which will aid, rather than hamper, the enforcement of the law. Moreover, any defects revealed by the raising of these questions can be corrected by appropriate amendments to the law or by appropriate state legislation, or by both. The fact which has most strongly impressed itself on me, after a close study of the operation of the Harrison law, is that in spite of handicaps, some of which have been noticed in this discussion, the federal officials charged with its enforcement, both those of the Bureau of Internal Revenue and those of the Department of Justice, have succeeded in performing their duties to an extent which has gone far toward the accomplishment of the essential purpose of the law—the prevention of the spread of drug addiction. Those who may be inclined to be impatient because they have not gone farther and faster should reflect that so long as in many communities no adequate provision has been made for the medical care and treatment of drug addicts, or of the defective individuals whose underlying condition is likely to express itself in addiction, a gradual tightening of the legal barriers may be wiser and juster than a sudden and complete clamping of the lid. Medical men, at any rate, may be expected to see the importance of a proper provision for taking care of the medical side of the problem, and to realize that such provision should at least keep pace with the purely restrictive measures.

52 Broadway.

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# *Medicolegal*

### Public Charitable Hospitals Not Liable for Negligence in Selecting Servants

*(Roosen v. Peter Bent Brigham Hospital (Mass.), 126 N. E. R. 392)*

The Supreme Judicial Court of Massachusetts, in affirming judgments in favor of the defendant hospital, says that two actions were brought, one to recover for the conscious suffering, and the other for the death, of a patient to whom it was alleged that corrosive sublimate was administered in place of Epsom salt. One of the main questions presented was whether a public charitable hospital can be held liable for the negligence of its managing officers in selecting incompetent servants and agents. But there is no sound distinction in reason between the liability of a hospital for the negligence of its inferior agents and its ability for the carelessness of its managers. The conduct of both relates to the execution of the charity. The inferior agents usually work for pay, while the managing officers, as matter of common knowledge, generally undertake the administration of the public charity without compensation, solely out of public spirit in a desire to serve the general welfare. If the hospital is held responsible for their acts of negligence, the funds devoted to the relief of suffering humanity must be diverted in the one instance to the same extent and manner as in the other to the payment of claims wholly foreign to the purposes of the public trust. The doctrine of liability of an employer for negligence in the selection of servants is a doctrine of the law of master and servant. So far as concerns third persons (except where there is some special statutory provision), there is no distinction between the liability of an employer for the negligence of his servants in the course of their employment and for his own negligence in selecting incompetent servants. The measure of responsibility in one case is the same as in the other. If a hospital is to be held responsible for negligent treatment of patients, there seems to this court to be no sound ground for a distinction between the negligence of the managers of the hospital and the negligence of subordinate servants as a basis of liability. A sound ground for distinction between exoneration from liability for the negligence of managers and that of subordinate agents seems equally wanting. Since it is settled, in Massachusetts, that there is no liability for negligence of the latter, it must follow that there is none for that of the former. The inevitable result of the Massachusetts decisions is to relieve a hospital from liability for negligence of the managers in selecting incompetent subordinate agents as well as for the negligence of such subordinate agents selected with care; and this conclusion is supported by the great weight of authority in other jurisdictions. Nor is any liability imposed on a hospital toward a patient, under the circumstances here alleged, by the so-called death statute of Massachusetts, which imposes a liability when "a person or corporation by his or its negligence, or by the negligence of his or its agents or servants while engaged in his or its business, causes the death of a person who is in the exercise of due care." The terms of that statute are not applicable to a case in which, from the nature of the corporation as a public charitable hospital, it cannot be guilty of negligence in respect of the treatment of its patients pursuant to the great charitable purpose for which it was established.

### Death from Use of Infected Towels Held Accidental

*(Business Men's Acc. Ass'n v. Schiefelbusch (U. S.), 262 Fed. R. 354)*

The United States Circuit Court of Appeals, Eighth Circuit, in affirming a judgment in favor of plaintiff Schiefelbusch, says that the defendant association issued a policy of accident insurance to her husband. The policy insured him "against loss resulting from bodily injuries, effected directly, independently, and exclusively of all other causes, contributing or proximate, through external, violent, and accidental means. . . . Blood poisoning resulting directly from bodily injuries shall be deemed to be included in the said term 'bodily injuries.'" The evidence on the part of the plaintiff showed that the insured, who was a dentist, was bald-headed, and, perspiring profusely on his head and neck during hot weather, had the habit of using, to the extent of a dozen times a day or more, to wipe the perspiration from the top of his head and neck, towels which he had used in the practice of his profession, that were dirty and had blood and pus on them, from the mouths of patients, as well as hardened particles of plaster of Paris. On Wednesday, he complained of pain at the back of his neck and the top of his head. There were circumscribed red spots on the top of the head and on the neck. They were inflamed and swollen. He suffered pain in the locality mentioned on Thursday and Friday. On Saturday morning he had a chill, and went to bed exhausted. He continually grew worse, became delirious on Sunday afternoon, and died early on Monday morning. A physician incised the red spot on the top of the head on Thursday, and found a small necrotic area underneath the skin, and no free pus. In the physician's judgment, the man had been infected by bacterial or septic infection; and there was medical testimony that not a day passed that he could not have been infected by the towels with the streptococcus germ. If he knew that the towels he used in the manner indicated would cause an abrasion of the skin, and also were infected with the streptococcus germ, then the means of death was not accidental, within the language of the policy. But the fact that he had this knowledge was matter of defense. If the insured used the towels without this knowledge, then the plaintiff showed that his death was caused by accidental means, as he could not be said to have intended the use of a towel that would infect him. There was nothing to indicate that the germ which caused blood poisoning came from any other source. Therefore the court holds that his death was caused by accidental means.

# Society Proceedings

## COMING MEETINGS

Am. Acad. of Ophthal. and Otolaryng., Kansas City, Mo., Oct. 14-16.
American Child Hygiene Association, St. Louis, Mo., Oct. 11-13.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Medical Association of the Southwest, Wichita, Kan., Nov. 22-24.
Mississippi Valley Medical Association, Chicago, Oct. 26-28.
New Mexico Medical Society, Roswell, Oct. 15-16.
Southern Medical Association, Louisville, Ky., Nov. 15-18.
Virginia, Medical Society of, Petersburg, Oct. 26-29.

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Diseases of Children, Chicago

September, 1920, **20**, No. 3

*Significance of Xanthochromia of Cerebrospinal Fluid. I. A. Abt and I. H. Tumpeer, Chicago.—p. 153.
*Bodily Mechanics; Its Relation to Cyclic Vomiting and Other Obscure Intestinal Conditions. F. B. Talbot and L. T. Brown, Boston. —p. 168.
Circulatory Reactions to Graduated Exercise in Normal Children. M. G. Wilson, New York.
*Relative Efficiency of Different Mercurial Preparations in Treatment of Congenital Syphilis in Infants and Children as Determined by Quantitative Analysis of Mercury Elimination in Urine. W. R. Ramsey and O. A. Groebner, St. Paul.—p. 200.
*Spasmophilia and Vitamins. L. von Meysenbug, Minneapolis.—p. 206.
*Case of Priapism Resulting from Rapidly Spreading Myxosarcoma with Generalized Metastases. D. B. Cowie, Ann Arbor, Mich.—p. 211.
Review of Literature of 1919 on Genito-Urinary Disease of Children. L. B. Hill, Boston.—p. 222.

**Xanthochromia of Cerebrospinal Fluid.**—A case is reported by Abt and Tumpeer because of the occurrence of yellow spinal and ventricular fluid in an infant of eight months period of gestation who lived thirty-seven days and who also manifested marked internal hydrocephalus, pyelitis and bronchopneumonia. The xanthochromia of the cerebrospinal fluid was due to a meningo-encephalitis, with numerous subpial hemorrhages as the source of the coloration.

**Bodily Mechanics and Obscure Intestinal Conditions.**—Faulty bodily mechanics is held by Talbot and Brown to be responsible for a great loss of efficiency. It is common to all ages, is easily corrected and can be corrected most economically during childhood. It is responsible in most instances for diminished powers of digesting fat in children and is the cause of a certain amount of chronic constipation. It is the background and probably the cause of many, if not most, cases of recurrent vomiting. In many instances the symptom of acute abdominal pain in children, when associated with chronic constipation, is due to poor bodily mechanics. These symptoms are often so severe that they are confused with those of acute intestinal obstruction due to other causes. In the cases cited by the authors in which the faulty body mechanics have been corrected, in connection with the other treatment, the patients have all shown a more speedy recovery than is seen in cases without this correction.

**Mercury Preparations in Congenital Syphilis.**—The study made by Ramsay and Groebner showed that mercurial ointment, 50 per cent., is preferred to the less concentrated forms and need not be repeated more often than twice weekly instead of daily. The quantity of mercury absorbed is much increased by friction. Calomel ointment is absorbed but less rapidly and to a less extent than the mercurial ointment and it should, therefore, be given in greater concentration. Mercuric salicylate in oil should be given hypodermically twice weekly instead of once. The mercuric chlorid, by hypodermic injections, although the dose is very small, continues to be eliminated for six or seven days. The fact, however, that its use frequently is followed by the appearance of protein in the urine should exclude it from the treatment of syphilis in children. Calomel by the mouth is absorbed in small amounts, and continues to be eliminated for a considerable time so that it is probable that it would be sufficient to give it at intervals of several days, thus avoiding diarrhea. Gray powder is absorbed to a small degree and eliminated rather rapidly so that large doses repeated daily would probably be necessary to maintain mercury in the circulation.

**Spasmophilia and Vitamins.**—The evidence presented by von Meysenbug shows that increased electrical irritability—so-called "spasmophilic reactions"—is not dependent on a deficiency in the diet of the water-soluble vitamin or of the other two known food accessory factors.

**Priapism Caused by Scrotal Myxosarcoma.**—Cowie reports a case of a rapidly developing tumor in the scrotum associated with what he believes to be multiple metastatic growths in the skeletal structures, intracranial changes, indefinite intrathoracic changes particularly on the left side, not involving the heart; with a history of injury which, however, occurred, apparently, after he first complained of back stiffness, but which may have had an influence in the process. It was impossible to determine the cause of the painful rigidity of the back and neck muscles. The patient seemed to be holding himself for fear of being hurt. The boardlike stiffness resembled that described by Escherich in his cases of pseudotetanus. Instead of more than one process being at work to induce the different groups of symptoms, Cowie believes the entire process to have been due to a malignant tumor with bone and visceral metastases.

### American Journal of Ophthalmology, Chicago

July, 1920, **3**, No. 7

Coordination of Refraction with Spectacle and Eye Glass Fitting. S. L. Olsho, Philadelphia.—p. 481.
Wasp Sting Keratitis, with Special Color Changes in Iris. Y. Yoshida, Kyoto, Japan.—p. 493.
Apparent Sympathetic Ophthalmia, Nine Months After Enucleation, with Implantation of Gold Ball in Tenon's Capsule. D. N. Dennis, Erie, Pa.—p. 497.
Peripheral Communicating Vessels Between Retina and Choroid. Fold of Inner Limiting Membrane in Chorioretinitis. M. Feingold, New Orleans.—p. 499.
Case of Ocular Pemphigus. W. C. Posey, Philadelphia.—p. 507.

August, 1920, **3**, No. 8

Cataract Operation on Glaucomatous Patients. V. Morax, Paris. —p. 561.
Nature of So-Called Blood Infiltration of Cornea. Y. Matsuoka, Kyoto, Japan.—p. 564.
Early Diagnosis of Pituitary Tumor with Ocular Phenomena. W. L. Benedict, Rochester, Minn.—p. 571.
Uniformity in Essentials of Perimetry. L. C. Peter, Philadelphia. —p. 584.
Ocular Notes on Lethargic Encephalitis, with Two Case Reports. G. Dickinson, Syracuse, N. Y.—p. 587.
Origin of Vitreous. H. J. Howard.—p. 589.
Are Objective Findings in Refraction Work Most Acceptable to Patient? W. N. Sharp, Indianapolis.—p. 597.

### Boston, Medical and Surgical Journal

Sept. 9, 1920, **183**, No. 11

William T. G. Morton, Discoverer and Revealer of Surgical Anesthesia: Plea for His Place in Hall of Fame. S. A. Knopf, New York. —p. 317.
*Gastric and Duodenal Ulcers: Typical and Atypical Forms; Relative Values of Diagnostic Procedures. C. W. McClure and L. Reynolds, Boston.—p. 321.
Implantation Methods in Cosmetic Rhinoplasty. S. Oppenheimer, New York.—p. 329.
*Bikinetic Therapeutics. J. Taylor, Philadelphia.
Endometritis: Pathology and Differentiation from Malignancy. W. C. Usher.—p. 333.

Sept. 16, 1920, **183**, No. 12

Value of County Tuberculosis Survey with Clinics. B. W. Billings, Boston.—p. 343.
Plea for Department of Tuberculosis in Medical Schools. W. J. Gallivan, Boston.—p. 348.
Itinerant Consultation Service. H. S. Wagner, Pocasset, Mass.—p. 351.
Occupational Therapy for Tuberculous. F. H. Hunt, Mattapan, Mass. —p. 356.
Nutrition Clinics and Tuberculosis. W. R. P. Emerson, Boston. —p. 361.

**Gastric and Duodenal Ulcers.**—In order to appreciate better and to evaluate more properly the significance of various methods as aids in the diagnosis of gastric and duodenal ulcer, and to comprehend better their relative importance, an analysis of the records of eighty selected cases of duodenal and gastric ulcer has been made by McClure and Reynolds. Fifty-five diagnoses were confirmed by operation. In the remaining cases the roentgen-ray findings or frank hema-

temesis made the accuracy of the diagnosis practically certain. The authors are convinced that the typical type of peptic ulcer may be diagnosed with a high degree of accuracy by the aid of the roentgen ray. In the diagnosis of the atypical class roentgen-ray studies are of the utmost value; in many cases the diagnosis cannot be made without the aid of the roentgen ray. Therefore, roentgen-ray studies should form a part of the physical examination of every gastro-intestinal case. In the great majority of cases laboratory findings are of less value as an aid in the diagnosis of peptic ulcer than those obtained from roentgenographic studies.

**Biokinetic Therapeutics.**—This term is offered by Taylor to describe remedies applied from the outside, accessory or supplemental or auxiliary, or so-called physical therapeutics.

Sept. 23, 1920, **183,** No. 13

Puerperal Sepsis and Its Treatment. R. S. Titus, Boston.—p. 371.
Correlation of Data in Cases Seen at Psychopathic Department and Foxboro State Hospital. L. G. Lowrey, Boston.—p. 377.
*Frequency of Fractures. A. Radiologic Analysis of 1,226 Cases. C. R. Scott, New Haven, Conn.—p. 384.
*Multiple Serositis. W. D. Reid, Boston.—p. 386.

**Frequency of Fractures.**—In radiologic analysis of 1,226 cases made by Scott as to locations the results were: skull, 7.01 per cent.; vertebrae, 2.11 per cent.; humerus, 4.89 per cent.; radius, 8.80 per cent.; clavicle, 3.26 per cent.; scapula, 1.38 per cent.; ulna, 7.01 per cent.; carpals, 0.97 per cent.; metacarpals, 5.30 per cent.; phalanges, 3.59 per cent.; pelvis, 2.93 per cent.; femur, 10.44 per cent.; fibula, 13.53 per cent.; tibia, 14.92 per cent.; tarsals, 3.18 per cent.; metatarsals, 3.18 per cent.; phalanges, 2.28 per cent.; patella, 0.89 per cent.

**Multiple Serositis**—Fifteen such cases were found by Reid among 3,900 necropsy reports, making the incidence of this disease just under 4 per cent. The condition was fully appreciated only at the necropsy. In two cases, however, the clinicians discovered an adhesive pericarditis, and in a third case the diagnosis was "chronic fibrous peritonitis." Physical examination was normal in nine cases. Of the remaining six, five presented definite ascites which was evident clinically and one showed slight ascites at the necropsy. In these six cases with ascites, the perihepatitis and perisplenitis were well marked, but in four cases the heart showed endocardial or myocardial lesions sufficient to be a factor in the production of the abdominal effusion. In seven instances the chronic multiple serositis (pericarditis, pleuritis, perihepatitis and perisplenitis) was the primary finding, and in the remaining eight it was listed as a secondary lesion. This group of cases was characterized by pathologic evidence of a previous inflammation of the pleura, pericardium and peritoneum.

## Canadian Medical Association Journal Toronto

September, 1920, **10,** No 9

Certain Fundamental Errors in Diagnosis and Treatment of Myocardial Insufficiency. C. L. Green, St. Paul.—p. 785.
*Surgical Treatment of Ulcerative Intestinal Tuberculosis as Occurring Chiefly in Course of Pulmonary Tuberculosis. E. A. Archibald, Montreal.—p. 804.
Psychiatry and Internal Medicine. C. F. Martin, Montreal.—p. 827.
Acute Intestinal Obstruction; Diagnosis. J. McKenty, Winnipeg.—p. 835.
Importance of Biochemical Tests in Patients Suffering from Prostatic Enlargement. F. S. Patch, Montreal.—p. 841.
Surgical Gynecology. H. P. Newman, San Diego, Calif.—p. 846.
Case of Myxedema. A. T. Mathers, Winnipeg.—p. 859

**Surgical Treatment of Intestinal Tuberculosis.**—The two chief contraindications to operation mentioned by Archibald are extensive and progressive pulmonary involvement and extensive disease in the small bowel. The most promising cases for operation he says are those in which physical examination and the roentgen ray combine to indicate a localization of the disease to the cecum and the right colon, while at the same time the lungs are but slightly affected and the patient is in good general condition. The operative procedure to be adopted under varying circumstances is discussed.

## Indiana State Medical Association Journal, Ft. Wayne

Sept. 15, 1920, **13,** No. 9

Hyperactivity of Thyroid. M. F. Porter, Fort Wayne.—p. 295.
The Physician; The Young Doctor. F. B. Wynn, Indianapolis.—p. 298.

## Journal of Mental and Nervous Diseases, Lancaster, Pa.

April, 1920, **51,** No. 4

*Deep Localization in Cerebral Cortex. E. G. Van't Hoog, Amsterdam.—p. 313.
*Multiple Brain Abscesses Secondary to Bronchiectasis and Kyphoscoliosis. C. C. Saelhof, Chicago.—p. 330.

**Deep Localization in Cerebral Cortex.**—According to Van't Hoog's investigations, the deep suprarenal cortex layers are receptory associative in accordance with Ariëns Kappers functional division. The functional nature of the granules is also receptive and associative in the postcentral region. The granular cells should, moreover, be conceived of as matrix cells not only in the fascia dentata but also in the neocortex.

**Secondary Multiple Brain Abscesses.**—A case of multiple brain abscesses secondary to bronchiectasis caused by the wedging of the lower lobe of the right lung into a pocket formed by kyphoscoliosis is described by Saelhof. The causative agents isolated and cultivated from both the abscesses and the suppurating lung were *B. fusiformis* and anaerobic streptococci. The author believes that the most probable route by which the infection traveled from its primary focus was the blood stream.

May, 1920, **51,** No. 5

*Two Different Types of Epidemic Encephalitis: Lethargic and Myoclonic. P. Boveri, Milan, Italy.—p. 409.
Biologic Problem of Adaptation. S. Paton, Princeton, N. J.—p. 413.
*Treatment of Disorders of Spinal System by Intraspinal Method and Its Value to Business Man. F. J. Farnell, Providence, R. I.—p. 420.
*Recent Experimental Investigations on Etiology of Disseminated Sclerosis. C. DaFano, London.—p. 428.

**Lethargic and Myoclonic Epidemic Encephalitis.**—Boveri maintains that the different symptomatology between the lethargic and the myoclonic types of epidemic encephalitis suggests a different pathologic localization of the virus. In the lethargic form the centers of encephalitis are localized particularly on a level with the central peduncles and the locus niger. It is a question whether in the myoclonic form of the disease the centers may not be localized in the optic thalamus in different degrees in a transitory manner.

**Extradural Medication in Spinal Disorders.**—Farnell suggests that extradural treatment should be considered as a part of the therapeutic procedure in such cases as do not respond to the intravenous method of treatment and that it may be used as a reinforcement to the intravenous method because of the fact that it does not interfere with the patient's usefulness to himself and society through his vocation. Puncture headache and stay in bed are avoided, hence this form of treatment might appeal to the business man and cause him to seek treatment sooner than he does and persist in it. Farnell injects arsphenamized serum into the extradural space.

**Etiology of Disseminated Sclerosis.**—DeFano says that more confirmatory evidence is necessary before one can definitely accept the view that disseminated sclerosis is an infectious disease originating and essentially due to the still mysterious penetration into the body of a specific spirochete.

June, 1920, **51,** No. 6

German Institute of Psychiatric Research. E. Kraeplin, Munich.—p. 505.
*Case of Diffuse Cerebrospinal Sclerosis. S. Uyematsu, Danvers, Mass.—p. 514.

**Diffuse Cerebrospinal Sclerosis.**—The case cited by Uyematsu differed clinically and anatomically from other cases. It showed in the beginning almost typical manicdepressive manifestations, but later the constantly progressing dementia was in the foreground. The patient showed evidence of hemiplegia, but the spastic paralysis was not as marked as in a case of the Heubner form. The principal pathologic-anatomic findings were abnormal firm consistency of the medullary substance with softened and cystic areas; diffuse increase of neurogliar elements in various forms; diffuse degeneration of the myelin sheaths and axis cylinders of the white matter, etc. As for the pathology, Uyematsu assumes an endogenous factor based on the number of hyperplastic conditions of the brain and the body organs.

## Journal of Pharmacology and Experimental Therapeutics, Baltimore

August, 1920, **16**, No. 1

*Toxicologic Study of Some Alcohols; Especial Reference to Isomers. D. I. Macht, Baltimore.—p. 1.
*Elimination of Carbon Monoxid from Blood After a Dangerous Degree of Asphyxiation; Therapy for Accelerating Elimination. Y. Henderson and H. W. Haggard, New Haven, Conn.—p. 11.
*Effect of Emetin on Endameba Dysenteriae in Stools. W. Allan, Charlotte, N. C.—p. 21.
Clotting Efficiency of Thromboplastic Agents: A Reply. P. J. Hanzlik, Cleveland.—p. 35.
*Carminative Action of Volatile Oils. J. W. C. Gunn, London.—p. 39.
Influence of Reaction on Precipitation of Proteins by Tannin. T. Sollmann, Cleveland.—p. 49.
*Stability of Benzyl Alcohol Solutions. D. I. Macht and A. T. Shohl, Baltimore.—p. 61.

**Toxicologic Study of Some Alcohols.**—The toxicity of the normal alcohols—methyl, ethyl, butyl and amyl—Macht says increases with their place in the aliphatic series, as indicated by the lethal dosage for cats, and by their effects on isolated frogs' hearts and plain muscle preparations. The secondary propyl, butyl and amyl alcohols were found to be less toxic than the corresponding primary alcohols. In discussing the toxicity of alcohols, Macht states a distinction should be made between the acute or immediate, and the secondary or remote effects of the drugs, as is well illustrated by the studies on methyl and benzyl alcohols.

**Carbon Monoxid Asphyxia.**—It is shown by Henderson and Haggard that during the development of carbon monoxid asphyxia there is vigorous hyperpnea, and that thereafter, probably owing to deficient oxygenation and other causes, there is a diminished production of carbon dioxid. As a result of deficiency of carbon dioxid in the blood, asphyxiated animals when restored to pure air exhibit for half an hour or more a very marked depression of breathing. The rate of elimination of carbon monoxid is correspondingly slow. The condition of tissue asphyxia is thus continued, although the body is surrounded by fresh air. It is suggested that this postgassing period of continued asphyxia may be of critical importance in inducing subsequent structural degenerations and functional impairments. Its abbreviation is therefore an important object both for therapy and prophylaxis. Oxygen inhalation during this period has only a slight effect; it is not adequately inspired. Inhalation of carbon dioxid diluted with air has an immediate effect. It augments breathing and thus hastens the elimination of carbon monoxid. Inhalation of oxygen plus carbon dioxid is far more effective than either gas alone; for the augmented breathing allows the oxygen to effect a rapid displacement of carbon monoxid from the blood. Functional restoration is correspondingly accelerated.

**Effect of Emetin on Endameba Dysenteriae.**—Using emetin and *Endameba dysenteriae* from various sources, Allan says in no instance did emetin affect the appearance or motility of these organisms in the stools in dilutions weaker than 1 : 2,000 in from one to two hours, and often dilutions as strong as 1 : 150 failed to kill the endameba in the allotted time.

**Carminative Action of Volatile Oils.**—Gunn is of the opinion that the carminative action of volatile oils can best be explained by their relaxing and inhibiting the movements of plain muscle. Their other effects on the gastro-intestinal tract may be explained by their local irritant action, by reflexes arising therefrom or possibly by acceleration of absorption.

**Stability of Benzyl Alcohol Solutions.**—Various specimens of benzyl alcohol solutions were sealed in ampoules made of different kinds of glass, and such solutions were examined by Macht and Shohl at intervals of time in regard to their anesthetic efficiency on the one hand, and their hydrogen-ion concentration on the other. Solutions of benzyl alcohol kept in nonsoluble glass preserve their anesthetic properties completely for long periods of time and such solutions tend to increase their hydrogen-ion concentration very slowly. Benzyl alcohol solutions kept in soft glass or alkaline containers tend to become alkaline in reaction and rapidly deteriorate in their anesthetic efficiency. It is suggested that the best method of preserving benzyl alcohol solutions is to prepare such solutions from a benzyl alcohol free from benzaldehyd, and to seal the same after the addition of a buffer solution in hard glass ampules.

## Medical Record, New York

Sept. 18, 1920, **98**, No. 12

Abandonment of Therapeutics in Medical Schools Due to Neglect of Its Curative Subdivision: Pharmaco-Endocrinology. C. E. De M. Sajous, Philadelphia.—p. 463.
Tissue Acidosis vs. Blood Acidosis. W. H. Mercur, Pittsburgh.—p. 467.
Therapeutics of Decreasing Body Alkalinity. W. H. Porter, New York.—p. 471.
Control of Hyperchlorhydria and Its Consequences by Cholecystogastrostomy. W. W. Babcock, Philadelphia.—p. 476.
Treatment of Syphilis. W. J. Highman, New York.—p. 477.
Guillotine: Simple One-Man Instrument for Doing Circumcisions. C. T. Stone, Brooklyn.—p. 479.

## Military Surgeon, Washington, D. C.

September, 1920, **47**, No. 3

Physiotherapy at U. S. Naval Hospital, New York. C. H. T. Lowndes, F. E. McCullough, A. M. Fauntleroy and W. S. Bainbridge, U. S. N.—p. 261.
Morale in Naval Hospitals. J. T. Boone, U. S. N.—p. 268
Neurologic Service in Naval Hospitals R. Sheehan, U. S. N.—p. 295.
Standardization of Material. A. Farenholt, U. S. N.—p. 303.
Case of Foreign Body in Lung. W. S. Russell, U. S. N.—p. 308.
Mastoid Cases. L. G. Jordan, U. S. N.—p. 310.
Subsistence of Patients at Naval Hospitals and the Commissary Officers' Functions. F. Fulton, U. S. N.—p. 318.
Case of Ruptured Urethra with Fractured Pelvis. J. R. Allison.—p. 324.
Motor Ambulances Observed Abroad. F. L. Pleadwell, U. S. N.—p. 331.
Single Exostosis of Long Bones. P. J. Reel and C. C. Hugger, U. S. N.—p. 338.
Four Cases of Dermatitis Exfoliativa Following Arsphenamin Administration. J. Magnette, U. S. N.—p. 342.
Yaws; Case Which Developed in Temperate Climate. C. S. Stephenson, U. S. N.—p. 344.

## Minnesota Medicine, St. Paul

September, 1920, **3**, No. 9

Diagnosis in Injury of Peripheral Nerves. A. S. Hamilton, Minneapolis.—p. 413.
Peripheral Nerve Injuries. J. F. Corbett, Minneapolis.—p. 422.
Cases of Acute Perforations of Stomach and Duodenum. N. O. Ramstad, Bismarck, N. D.—p. 430.
*Treatment of Fifty-One Selected Cases of Influenza in Epidemic of 1920. W. C. Chaney, Rochester, Minn.—p. 436.
Paralysis of Abducens Nerve Secondary to Mastoiditis. G. C. Dittman, St. Paul.—p. 439.

**Treatment of Influenza.**—The most important essentials in the treatment of influenza, Chaney says, are rest and isolation in the complicated cases, fresh air, and the maintenance of a uniform temperature of 60 F. When indicated, maximum elimination is encouraged by saline laxatives, liquid diet, large quantities of water, and tepid sponge baths whenever perspiration is profuse. Small doses of acetphenetidin may be given for muscular pains, and small doses of morphin control restlessness when other drugs fail. Gastro-intestinal disturbances may be relieved by sodium bicarbonate in 3 gm. doses until the urine becomes alkaline. In this connection it is interesting to note that the estimation of alkali reserve in the blood rarely indicated more than a mild acidosis. Rosenow's pneumococcic antigen seemed to be a helpful therapeutic measure in Chaney's experiences.

## New Jersey Medical Society Journal, Orange

September, 1920, **17**, No. 9

Consideration of Results in Treatment of Simple Fractures. W. L. Estes, South Bethlehem, Pa.—p. 291.
Internist's Duty to Profession and Public. W. B. Stewart, Atlantic City, N. J.—p. 298.

## New York Medical Journal

Sept. 25, 1920, **112**, No. 13

*Persistent Voluntary Mutism. A. Gordon, Philadelphia.—p. 433.
Nature and Cause of Stammering. M. Solomon, Chicago.—p. 435.
National Morale in Relation to Hysteria, Military and Industrial. T. A. Williams, Washington.—p. 436.
Rhythmic Electric Currents in Treatment of Abdominal and Pelvic Relaxation. G. Betton Massey, Philadelphia.—p. 441.
First Aid in Infant Feeding. J. Sobel, New York.—p. 442.
Disturbances of Heart and Liver Caused by Low Grades of Astigmatism. E. L. Jones, Cumberland, Md.—p. 447.
Squint. J. H. Dunnington, New York.—p. 452.

**Persistent Voluntary Mutism.**—Gordon reports the case of a boy, aged 13, who, along with normal features in the intellectual sphere, presented certain abnormalities in the field of judgment and in the domain of his affective faculties. The

abnormal manifestation of absolute mutism developed rapidly after reading a story on mutism. No power of persuasian or argumentation succeeded in breaking the disorder.

## Northwest Medicine, Seattle

September, 1920, **19**, No. 9

*Recent Advances in Diagnosis of Heart Disease. A. W. Hewlett, San Francisco.—p. 224.
War and Heart. K. Winslow, Seattle.—p. 227.
*Three Cases of Pericarditis in Which Early Symptoms Were Entirely Referred to Abdominal Cavity. W. B. Holden, Portland, Ore. —p. 230.
Diagnosis of Prostatism. F. Hinman, San Francisco.—p. 231.
Surgical Treatment of Urinary Tuberculosis. A. H. Peacock, Seattle. —p. 235.
Cystitis. W. J. Pennock, Spokane, Wash.—p. 239.

**Value of History in Diagnosis of Heart Disease.**—In the examination of patients with cardiac complaints Hewlett says an accurate history and a correct interpretration of the symptoms elicited is of as great importance now as it has always been. The more recent additions to diagnosis have served to furnish new objective evidence of cardiac disease. Particular search should be made for cardiac infection, for diastolic murmurs, for enlargement of the heart, for significant changes in rhythm and for alterations in the form of the electrocardiogram. If one of more of these can be found, organic disease cannot be excluded. If, on the other hand, they cannot be found and if the symptoms are such as to suggest an irritable heart, the latter condition becomes a probable explanation of the cardiac complaints.

**Pericarditis with Abdominal Symptoms.**—In one of the cases cited by Holden the symptoms manifested led to a diagnosis of perforating ulcer and immediate laparotomy was done. The abdomen was negative. Two days later positive signs of pericarditis were present. Necropsy revealed purulent pericarditis. In the second case a probable diagnosis of appendicitis was made and operation advised. Laparotomy revealed a normal appendix. Twenty-four hours later a marked pericardial friction was present. The third patient had been sick one day with abdominal pain, tenderness and rigidity, fever, leukocytosis, urine negative, chest and heart negative. Symptoms and signs pointed to trouble below the diaphragm. Operation found a normal abdomen. Two days later pericarditis and endocarditis were unmistakably present.

## Ohio State Medical Journal, Columbus, Ohio

Sept. 1, 1920, 16, No. 9

Some Surgical Phases of Cancer Problem. F. Warner, Columbus. —p. 645.
Precancerous Condition of Skin. E. D. Tucker, Toledo.—p. 651.
Diagnosis of Incipient Pulmonary Tuberculosis. B. C. West, Dayton. —p. 652.
Laryngologist and Diseases of Lungs. J. A. Thompson, Cincinnati. —p. 655.
District Tuberculosis Hospitals. R. R. Richison, Springfield.—p. 658.
How We Attempt to Do Scientific Obstetrics in General Practice. A. A. Brindley, Port Clinton.—p. 660.
Treatment of Syphilis of Central Nervous System. C. L. Cummer, Cleveland.—p. 663.
Intradural and Extradural Optic Nerve Tumors and Their Surgical Management. H. Reid and R. Sattler, Cincinnati.—p. 666.

## Porto Rico Medical Association Bulletin, San Juan

December, 1919, **13**, No. 124

Medical Profession as Social Entity. F. del Valle Atiles.—p. 94.
Clinical Studies on Influenza. M. Quevedo Baez.—p. 104.
Necessity for Medical Inspection of Eye, Nose and Throat in the Schools of Porto Rico. A. R. Laugier.—p. 115.
*Mycotic Dermatitis of Feet in Porto Rico. J. Barreiro.—p. 121.
Prognosis of Gallbladder and Bile Duct Infections. J. Avilés.—p. 124.

**Mycosis of Feet in Porto Rico.**—Barreiro remarks that the same factors of heat and humidity which promote the luxuriant vegetation of the island promote the growth of micro-organisms of the fungus type. The skin in the tropics is a magnificent incubator for cultures, always in the best of working order. He selects for special study here the mycosis of the feet of the Hebra eczema marginatum type. This is very common but it is often regarded as a manifestation of syphilis, liver or other disease, its mycotic nature unrecognized. The first symptom is generally itching between the toes and then the minute vesicular eruption develops in folds and crevices. This is usually the whole of the clinical picture, but occasionally the mycosis invades the lymphatics in the leg and groin, with accompanying fever, and sometimes foci of suppuration deep in the tissues. He has had occasion to incise several of these deep abscesses in the leg or groin whose origin might not have been suspected if the causal trichophyton had not been sought and found, the primary lesion in the foot having been so insignificant as to have escaped attention. He treats the mycosis by painting the lesion with 10 per cent. tincture of iodin and dusting with powder when dry, repeating this every second or third day, using a 5 per cent. tincture until recovery is complete. This treatment is not only effectual but it clears up the diagnosis, as it has never failed in his 100 cases.

June, 1920, **14**, No. 126

Differential Diagnosis of Tropical Pyrexias Most Commonly Observed in Porto Rico. A. Torregrosa.—p. 25. Cont'd.
Professional Fees. F. del Valle Atiles.—p. 58.
*Venereal Granuloma. Salvador Giuliani.—p. 61.

**Venereal Granuloma.**—Giuliani relates that two young women were admitted to his service with the diagnosis of inoperable cancer of the vagina, but one proved to be a patient whose case history he had published some years before as a venereal granuloma, the causal bacterium being found in pure cultures. The other patient had a spirochete ulceration. The granuloma was extremely extensive and so painful that sedatives had to be given. The vulvovaginal lesions were laved with a 1:1,000 solution of tartar emetic and 2.5 c.c. of a 1 per cent. solution of the same were injected into a vein at the elbow. In three weeks five injections were given by the vein, in increasing doses up to 20 c.c. as the maximum. No effect on the granuloma was evident, and treatment was continued with the local applications alone. In the course of the next week, however, the ulcerating granuloma cleared up, there was no further secretion, and smooth cicatricial tissue lined the defect in the tissues. By another week the cure seemed to be complete, and the woman left the service. This experience confirms the fine results obtained with tartar emetic in Brazil, the success of treatment clearing up the diagnosis in dubious cases.

## Southern Medical Journal, Birmingham, Ala.

September, 1920, **13**, No. 9

*Syphilis of Heart and Aorta. I. I. Lemann and A. Mattes, New Orleans.—p. 623.
*Analysis of One Hundred Cases of Neurosyphilis. G. M. Eckel, Hot Springs, Ark.—p. 629.
Syphilis of Mucous Membranes. L. Thompson, Hot Springs, Ark.— p. 631.
Diseases of Pancreas: Case Reports. J. E. Knighton, Shreveport, La. p. 636.
Gastric Neuroses. A. G. Brown, Richmond, Va.—p. 639.
Lessons from Study of Typhoid Fever Among American Soldiers. L. J. Johns, Tallapoosa, Ga.—p. 642.
Recent Advances in Diagnosis and Treatment of Syphilis and Gonorrhea in Relation to Public Health Measures. D. M. O. Robinson, Washington, D. C.—p. 647.
Rural Dental and Surgical Clinics. G. M. Cooper, Raleigh, N. C.— p. 654.
Opportunities of Rural Public Health Nurse to Develop Child Hygiene. R. A. Dodd, Columbia, S. C.—p. 658.
Barrel Stave Splint in Fracture of Clavicle. H. A. Royster, Raleigh, N. C.—p. 663.
Injuries of Spleen: Report of Four Cases. E. B. Claybrook, Cumberland, Md.—p. 667.
*Accidental Inflation of Colon. R. B. Slocum, Wilmington, N. C.— p. 669.
Value in Systematic Examination of Urogenital Tract. G. Timberlake, Baltimore.—p. 670.
Surgery of Prostate. J. H. Carter, Memphis, Tenn.—p. 673.
New Operation for Ptosis-Cautery Puncture. W. P. Reaves, Greensboro, N. C.—p. 679.

**Syphilis of Heart and Aorta.**—Only nine of the one hundred aortas studied by Lemann and Mattes postmortem appeared to have a smooth intima and of these nine, three when studied microscopically presented the histologic picture of syphilis. Thus only six out of one hundred aortas were normal and five of the six were those of children below the age of ten; only one adult aorta (twenty years old) was normal. There were three aneurysms of the aorta in the series, an incidence approximating that usually found. In a former study of 2,000 necropsies Lemann found aneurysms of the aorta in 3 per cent. Another series of one hundred cases of cardiovascular disease in which Wassermann reactions were made were analyzed.

Thirty-six reactions were positive; sixty-four were negative. The hearts of the fifty-five bodies showing mesaortitis syphilitica were apparently normal grossly in forty-one instances. However, only sixteen of these forty-one proved on histologic examination to be entirely free of abnormality. The findings in both series of cases are discussed.

**Neurosyphilis.**—Of the series of 100 cases analyzed by Eckel, forty-four (44 per cent.) were cases of tabes dorsalis, and of these 30 per cent. occurred among females and 70 per cent. among males. The earliest occurred at the age of 31 and the oldest at 58. The probable date of the onset of symptoms from the date of the initial lesion, as best estimated from the history of the patient, varied from three to twenty-one years with the average at eleven years. Of the forty-four cases of tabes, twelve were advanced, thirteen moderately advanced, and nineteen were in the early or incipient stage. Of blood Wassermanns done on the tabetics, 45 per cent. showed negative, and of these only three became positive after provocative arsphenamin. There were twenty-one cases showing neurasthenic complex with greatly exaggerated reflexes and usually hyperactive pupils easily fatigued; five cases of Erb's syphilitic spinal paralysis; sixteen cases of sciatica varying from subacute to chronic forms with atrophy and paralysis; seven cases of optic atrophy. There were cases showing symptom complexes closely resembling chronic recurring tetany, multiple sclerosis, amyotrophic lateral sclerosis, bulbar palsy, progressive muscular atrophy, and one case of syringomyelia.

**Competency of Ileocecal Valve.**—Slocum's case is of interest in connection with Cannon's work on the movements of the large intestine, showing, as it does the competency of the ileocecal valve.

## Southwest Journal of Med. and Surg., El Reno

July, 1920, **28**, No. 7

Importance of Recognizing Cases of Ectopic Pregnancy. L. A. Sutter, Wichita, Kan.—p. 117.
Elbow Injuries. H. D. Jerowitz, Kansas City, Mo.—p. 121.
Hysteria. A. D. Young, Oklahoma City, Okla.—p. 125.
Operative Technic of Prostatectomy. E. G. Mark, Kansas City.—p. 130.

## Surgery, Gynecology and Obstetrics, Chicago

September, 1920, **31**, No. 3

*Tumors of Bladder. W. C. Danforth and B. C. Corbus, Chicago.—p. 219.
*Syphiloma Vulvae. Arthur Stein, New York.—p. 277.
*Effects of Radium Emanations on Brain Tumors. C. F. Frazier, Philadelphia.—p. 236.
*Effects of Radium on Normal Brain Tissue. C. S. Williamson, R. O. Brown and J. W. Butler, Philadelphia.—p. 239.
Recklinghausen's Disease with Surgical Complications. C. E. Caldwell, Cincinnati.—p. 243.
Interpretation of Muscle Function in Relation to Injuries of Peripheral Nerves. C. C. Coleman, Richmond, Va.—p. 246.
*Clinical Consideration of Osteomyelitis. A. J. Oschner and D. W. Crile, Chicago.—p. 263.
Moisture and Ash of Maternal and Fetal Blood. H. J. Stander and M. Tyler, New Haven, Conn.—p. 276.
*Amniotic Hernia; Report of Case. E. Friend, Chicago.—p. 282.
Management of Fractures of Femur. J. J. Moorhead, New York.—p. 288.
Bone Pin Grafts in Ununited Fractures of Lower Jaw. R. E. Soule, Newark N. J.—p. 298.
*Radium Treatment of Cancer of Bladder; Report of Case. H. A. Kelly and R. M. Lewis, Baltimore.—p. 303.

**Tumors of Bladder.**—Three carcinomas, three papillomas and one condyloma of the bladder are reported by Danforth and corbus. They emphasize the necessity of remembering that syphilitic growths may very closely simulate carcinoma and that careful observation may be needed to distinguish between them. They also call attention to the value of radiotherapy as an adjunct to operative measures.

**Syphiloma of Vulva.**—Three cases are reported by Stein. He says that the treatment under all circumstances should consists of (1) operative removal of all tumors, hypertrophied tissues and ulcers, followed in the same session by (2) energetic cauterization and combined with (3) intensive antisyphilitic medication.

**Radium Therapy of Brain Tumors.**—Radium has been applied in Frazier's clinic under the direction of Dr. Henry K. Pancoast in the treatment of brain tumors in twenty-four cases. Three cases are cited as illustrations of what radium may accomplish. In these there seems to be indisputable evidence that by radium emanations the growth of the tumor has been arrested and in all probability the tumor destroyed.

**Effect of Radium on Normal Tissues.**—Williamson and his associates found by experiments that the roentgen rays after passing through 0.4 millimeter of platinum penetrate brain tissue and have a destructive action within a radius of 5 millimeters, with the dosage of 900 milligram hours. The effect on the blood vessels varies according to the distance from the radium and the number of hours applied. These experiments give assurance that, in the case of those brain tumors which respond readily to radium, little or no damage will be inflicted on the brain tissue surrounding the tumor, if the radium is implanted in the growth. The dosage employed on the growth can be regulated so as to be destructive only to the periphery.

**Treatment of Osteomyelitis.**—Local foci of infection, such as abscesses of tonsils or teeth or sinuses, Ochsner and Crile state, should invariably be eliminated at once on undertaking the treatment of patients suffering from osteomyelitis. The operation should consist in splitting the periosteum for a distance of from 2 to 5 cm. beyond the area of pain on pressure in the bone in each direction, and the periosteum should be loosened from the bone for a distance of from 1 to 2 cm. on each side of the incision. In extremely severe cases this should be the extent of the primary operation. In less severe cases ultimate healing can be hastened by carefull opening the medullary canal at the point previously located because of pain on pressure. Moist hot antiseptic dressings with fixation of the extremity and with the use of electric light treatment increases the comfort and facilitates healing.

**Amniotic Hernia.**—Amniotic hernia is a rare condition. Congenital umbilical hernia of the cord in Friend's opinion is a misnomer and should be substituted by the term amniotic hernia. The treatment, when resection of abdominal organs is not indicated is operative immediately after birth; for small protrusions or in the case of failure to recognize the condition until late, palliative treatment is indicated. Friend's patient died on the second day after birth. The necropsy report is given in full.

**Radium Treatment of Bladder Cancer.**—A case of infiltrative bladder carcinoma treated by radium, the patient being now apparently well, is reported by Kelly and Lewis.

## Texas State Journal of Medicine, Fort Worth

September, 1920, 16, No. 5

*Bubonic Plague. M. D. Levy, Galveston, and D. McMicken, Beaumont.—p. 195.
Calculi in Right Half of Horseshoe Kidney. A. I. Folsom, Dallas.—p. 200.
Report of a Case of Orthostatic Albuminuria. B. Reading, Galveston.—p. 201.
Some Clinical Features of Prostatic Hypertrophy. H. McC. Johnson and J. M. Venable, San Antonio.—p. 202.
Cardiac Arhythmias. L. A. Riely, Oklahoma City.—p. 204.
Use of Electrocardiograph in Diagnosis of Difficult Heart Cases. J. S. Davis and G. M. Underwood, Dallas.—p. 206.
Cortical Inlay Bone Graft Emplaced Under Pressure. G. Hamilton, Houston.—p. 210.

**Bubonic Plague.**—Among the fourteen cases of plague reported by Levy and McMicken there were only six deaths, which the authors regard as corroborative evidence as to the efficacy of antiplague serum in large doses in the treatment of this disease. The cases embraced the bubonic and septicemic forms, and in one case meningitis was a complication. Of the six patients who died, only two received serum treatment, and of these, one received only one injection of 50 c.c. before death ensued. The authors suggest that patients with axillary buboes be given much larger initial doses than those with femoral or inguinal involvement.

## Virginia Medical Monthly, Richmond

September, 1920, **47**,, No. 6

Historic Petersburg: Three Centuries of An Old Virginia Town. A. K. Davis, Petersburg.—p. 233.
First Aid to Insane. W. F. Drewry, Petersburg.—p. 244.
Pyelitis. J. B. Jones, Petersburg.—p. 247.
Intubation for Laryngeal Diphtheria. E. L. McGill, Petersburg.—p. 250.

Management of Influenza at "Old Hickory." G. H. Reese, Petersburg.—p. 254.
Importance of Routine Examinations of Nose, Throat and Ear. W. C. Moomaw, Petersburg.—p. 256.
Some Experiences and Records of a Municipal Health Department in an Extra Cantonment Zone, 1917-1919. R. A. Martin, Petersburg.—p. 259.
Epidemic Encephalitis, Report of Two Cases. G. A. Ezekiel, Richmond.—p. 263.

## West Virginia Medical Journal, Huntington

September, 1920, **15**, No. 3

Maniac Depressive Psychosis. L. V. Guthrie, Huntington, W. Va.—p. 81.
Microbes and Men. W. W. Brown, Shenandoah Junction, W. Va.—p. 89.
Cancer Problem. F. L. Hupp.—p. 91.
Physician and Hospital. H. E. Gaynor, Parkersburg, W. Va.—p. 93.
Pyelitis in Childhood C. B. Preston, Kingston, W. Va.—p. 96.
Symptoms and Treatment of Urethritis. C. A. Farren, McClung, W. Va.—p. 98.

## Wisconsin Medical Journal, Milwaukee

September, 1920, **19**, No. 4

Plastic Work in Surgery of Jaw. G. V. I. Brown, Milwaukee.—p. 143.
Evacuation of Wounded in Battle. G. W. Neilson, Milwaukee.—p. 152.
Indications for Radium Therapy in Surgical Conditions of Pelvic Organs. H. Schmitz, Chicago.—p. 157.
Radium Treatment in Gynecology. A. H. Curtis, Chicago.—p. 172.
Radium in Dermatology. H. R. Foerster, Milwaukee.—p. 174.
Roentgen Rays in Dermatology. C. A. Baer, Milwaukee.—p. 177.

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## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

Aug. 28, 1920, No. 3113

Clinical Significance and Course of Subacute Bacterial Endocarditis. H. D. Rolleston.—p. 301.
*Chronic Abdominal Pain. E. Deanesly.—p. 312.
*Roentgen Rays and Appendix. R. A. Bennett.—p. 316.
*Anesthesia in Tonsil and Adenoid Operations. C. Yorke.—p. 318.

**Diagnosis of Gastric and Duodenal Ulcer.**—Deanesly has found that in cases in which gastric or duodenal ulcer is verified by operation, the clinical history and symptoms have almost always enabled a correct diagnosis to be made beforehand. On the other hand, many cases with symptoms apparently pointing clearly to ulcer, such as a definite time relation between pain and food, and even hematemesis actually observed, were found at the operation to have no demonstrable ulcer either in the stomach or duodenum. In other words where the ulcer existed it was nearly always diagnosed, but many were diagnosed without being found. Another observation which has impressed Deanesly strongly is that in every case in which he has operated in which there was a definitely observed chronic melena, he has found a duodenal or pyloric ulcer. Another impression gathered is that the clinical history of cases diagnosed or suspected of ulcer but disproved by operation, though sometimes resembling very closely the history of a true ulcer, when scrutinized fails in one or more important features. The symptoms are apt to be more vague; the time relation between pain and food is less precise than usual. Hematemesis is almost always absent.

**Roentgen Rays and Appendix.**—In a series of fifty consecutive opaque meals given for one purpose or another, but always having in view the behavior of the parts in the ileocecal region, Bennett says the appendix was definitely recognized in a much smaller percentage of cases than might have been expected; in only 45 per cent. could one be sure that what one was looking at was really the appendix. Of the appendices seen twenty were found diseased at the subsequent operation, two were apparently normal. Of the remaining twenty-eight in the series, fifteen were diseased, thirteen were normal; of the fifteen the lumen was obliterated in three, and in twelve the organ was so bound down to the side or back of the cecum that even with a patent lumen full of barium, it would have been impossible to differentiate its shadow from that of the surrounding coils of intestine.

**Anesthetic for Tonsil and Adenoid Operations.**—Yorke advocates the use of nitrous oxid or local anesthesia in preference to ether and chloroform, in the removal of tonsils and adenoids.

## China Medical Journal, Shanghai

July, 1920, **34**, No. 4

*Some Current Problems in Protozoal Dysentery. F. G. Haughwout.—p. 343.
Surgery of a War Hospital in England. J. L. Maxwell.—p. 358.
Lethargic Encephalitis in Canton. Wm. W. Cadbury.—p. 371.
Lethargic Encephalitis in Hwaiyuan. H. A. Judson.—p. 373.
Lethargic Encephalitis in Peking. Wm. G. Lennox.—p. 376.
Tetanus Neonatorum: A Study in Prophylaxis. J. Kirk.—p. 378.
*Tetanus Due to Ear Infection. S. Neville.—p. 381.
Cystic Disease of Fibula. W. C. Dale.—p. 382.
Bier's Regional Venous Anesthesia. H. B. Taylor.—p. 385.
Rupture of Abscess of Liver into Pleura. Report of Case. R. E. Brown.—p. 387.
Bacillus Pyocyaneus Infection: Report of Case. E. T. H. Tsen.—p. 389.

July, 1920, **34**, No. 4 (Anatomical Supplement)

Anthropology of Asiatic Peoples. A. Hrdlicka.—p. 30.
Stone Implements of Neolithic Type in China. J. G. Andersen.—p. 40.
Origin of Vitreous. H. J. Howard.—p. 47.
Motor Nerve of Soft Palate and Relation Between Soft Palate and Paralysis of Facial Nerve M. Inouye.—p. 58.
Concerning Anthropometry and Observations on Healthy Subjects. D. Black.—p. 64.

**Benzyl Benzoate in Protozoal Dysentery.**—Haughwout considers benzyl benzoate an admirable remedy in the treatment of acute protozoal dysentery and is possibly not excelled by any of the other drugs customarily employed. However, much remains to be discovered regarding its action on the infection, and patients will have to be watched for a long period after treatment to discover if a cure has been effected. It is still too early to form an opinion one way or the other.

**Tetanus Following Ear Infection.**—In China it is the custom for barbers to remove polypi or wax from the ears. Owing to ignorance, carelessness and the dirty instruments used serious results not infrequently follow this practice. In the particular case reported by Neville tetanus was the result. A feature of interest was the long incubation period—one month.

## Edinburgh Medical Journal

September, 1920, **25**, No. 3

Valedictory Address to the Edinburgh Obstetrical Society. J. H. Croom.—p. 145.
Importance of Symptoms in Medical Practice and Research. J. Mackenzie.—p. 156.
Functional Mental Illnesses. R. G. Rows.—p. 166.
Case of Retroperitoneal Fibromyomatous Tumor of Uterus. F. D. Cairns.—p. 178.
Syphilis: Its Early Diagnosis and Initial Treatment. D. Lees.—p. 182.

## Indian Medical Gazette, Calcutta

August, 1920, **55**, No. 8

Superfluous Woman. H. F. Stephens.—p. 281.
*Case of Melancholic Stupor (Psychocoma). O. St. J. Moses.—p. 281.
Vaccine Therapy in Typhoid and Paratyphoid Fever. C. J. Fox.—p. 282.
*Sodium Morrhuate and Sodium Hydnocarpate in Leprosy. P. Ganguli.—p. 284.
Case of Hydrophobia. S. Amritaraj.—p. 286.
Bacteriologic Investigation of Normal and Diseased Eyes. C. C. Sinha.—p. 288.
*Thymol Treatment of Hookworm Disease. B. H. Lal.—p. 289.
Organotherapeutic Treatment of Malaria. A. J. Noronha.—p. 289.
Hazaribagh: A Popular Health Resort. A. Roy.—p. 290.
Case of Penetrating Abdominal Wound. S. N. Misra.—p. 298.
*Large Lipoma in Child. J. C. Tull and M. Alam.—p. 299.

**Psychocoma.**—Moses reports the case of a man, aged 42, whose state of melancholia became psychocoma. For two and three-quarter years, the patient lay in a state of utter stupor, without manifesting any change that was perceptible. During the whole of the time, he lay on the flat of his back, in practically the same position, with his forearms flexed at the elbows, his hands flexed at the wrists and meeting over the sternum, and his legs drawn up in semi-flexion. All his limbs were as rigid as could be, and he resisted all efforts made, with any reasonable degree of force, to extend them. The muscles of the back and neck shared in this extraordinary stiffness, so that if he were lifted by the occiput, the entire head, neck and body could be raised as if he were a block of wood. His eyes in wakefulness were always wide open, and had a fixed, vacant, far-away stare, and the veins on his forehead stood out with a certain degree of promi-

nence. There was an utter loss of volitional power. He passed urine and excreta in bed, and seemed to feel no annoyance or discomfort owing to this circumstance. His expression remained exactly the same throughout—utterly vacant. Words addressed to or shouted at him made not the slightest difference in his expression. On no occasion was he known to call for food or to manifest any desire for it, and never was he seen or known to help himself to any when food was placed beside him. Feeding was carried out throughout his illness by means of the nasal tube. Occasional attacks of diarrhea were the only other untoward incidents in the course of the case. His circulation remained moderately good throughout, and the reflexes remained normal. At no time were there any trophic changes, the patient keeping marvelously well-nourished and entirely free from bed-sores or any approach to these—a circumstance which appears to be characteristic of cases of psychocoma. The patient suddenly awoke as if from a long dream. For the first time after nearly three years of the most rigid silence, he spoke in a feeble whisper and indicated his desire to write. He was given pencil and paper, and instantly, in a perfectly legible though somewhat shaky handwriting, he wrote in English a few lines which had a perfectly rational meaning. Two days thereafter his voice was distinctly audible and his speech quite intelligible. He was able to sit up with help and to take semisolid food, but appeared to be somewhat depressed. Before the week was out he was able to feed himself, and gradually attained to full vegetarian diet. He had only a very vague recollection of what had happened during the past three years. Massage and practice have restored his power of walking.

**Sodium Morrhuate and Sodium Hydnocarpate in Leprosy.**—Five cases of leprosy are reported by Ganguli in which good results were obtained from the use of sodium morrhuate and sodium hydnocarpate. Both preparations have a remarkable action on the maculo-anesthetic type of leprosy. Mixed treatment with both drugs produces very desirable results. Where sodium morrhuate failed to quickly reduce the nodular deposits, sodium hydnocarpate succeeded.

**Night Blindness in Uncinariasis.**—The most striking observation made by Lal was that in eight of the 451 cases treated, the patients, before treatment, suffered from night blindness, and the treatment resulted in a complete recovery from this defect two or three days after the first administration of thymol.

**Lipoma of Breast in Child.**—The tumor in Tull and Alam's case was situated in the breast of a girl, 11 years old. It weighed 51 pounds.

## Journal of Tropical Medicine and Hygiene, London

Sept. 1, 1920, **23**, No. 17

Graphic Method of Demonstrating Tropical Medicine and Hygiene. A. Balfour and S. H. Daukes.—p. 213.
*Surgical Treatment of Ulcus Tropicum. R. Howard.—p. 215.

**Treatment of Tropical Ulcer.**—The operation done by Howard consists in scraping away all the sloughs and softened tissue with a Volkmann's spoon. When a firm base of sound tissue has been obtained, the undermined edge of skin is cut away with scissors curved on the flat, so as to leave no pockets. Any ragged pieces of fibrous tissue that remain in the base of the ulcer are then cut away with scissors. The surface is washed over with an antiseptic, and then dressed with cyanid gauze and some antiseptic wool, and firmly bandaged. The first dressing is done forty-eight hours after the operation.

## South African Medical Record, Cape Town

Aug. 14, 1920, **18**, No. 15

Action of Volatile Oil of Wild Celery. J. W. C. Gunn and E. M. K. Geiling.—p. 288.

## Bulletins de la Société Médicale des Hôpitaux, Paris

July 23, 1920, **44**, No. 27

*Pseudoradicular Nevus. Laignel-Lavastine and Tinel.—p. 1048.
*Mega-Esophagus. Oettinger and Caballero.—p. 1052.
Radioscopy of Aorta. C. Laubry and L. Mallet.—p. 1058.
Spirochetal Jaundice at Paris. P. Menetrier and A. Durand.—p. 1063.
Brain Abscess with Bronchiectasia. Idem.—p. 1066.
*Contracture of Abdominal Wall with Pleurisy. F. Ramond and J. Deroche.—p. 1072.
*Gonococcus Jaundice. F. Widal and E. May.—p. 1076.
Onset of Lethargic Encephalitis with Delirium. H. Eschbach and P. Matet.—p. 1081.
*Pituitary Tumor. Reverchon and others.—p. 1084.
*Pyothorax from Amebic Abscess. R. Proust and L. Ramond—p. 1086.
*Biochemism of Scurvy. Labbé and others.—p. 1094.
Negative Radiologic Findings with Pleural Effusions. P. Ameuille.—p. 1099.
*Slow Cancer in Liver. Ribadeau-Dumas and de Laulerie.—p. 1101.
Pigmented Buccal Patches and Syphilis. A. Léri and Cochez.—p. 1105.
*Membranous Colitis. Florand and Girault.—p. 1108.
*Syphilis of the Stomach. Florand and Girault.—p. 1110; p. 1111.

**Pseudoradicular Nevus.**—The nevus extended from neck to finger, corresponding to an area innervated by the upper portion of the sympathetic center for chest and arm. It seemed to be a vasomotor paralysis, a dissociated sympathetic syndrome.

**Idiopathic Dilatation of the Esophagus.**—The esophagus and cardia are permeable in the two cases described, but the large esophagus is shaped like a radish, and the long end becomes kinked. One of the men works the contents down into the stomach by bending over backward and drawing a deep breath. The other gets relief by swallowing a glass of water when he feels that the food is arrested in the esophagus. As soon as the food passes into the stomach he bends forward and expels the water, sometimes repeating this three or four times at a meal. This mega-esophagus seems to be congenital, and systematic dilatation of the narrow outlet might help, but an anastomosis between esophagus and stomach offers the only prospect of a permanent cure.

**Contracture of Abdominal Wall in Pleurisy.**—Ramond and Deroche found the muscles of the abdominal wall contracted when palpated lightly below the costal arch, the patient recumbent, in cases of pleurisy. This contracture was never detected otherwise except with conditions not liable to be confused with a pleural effusion.

**Gonococcus Jaundice.**—Widal and May report the recovery under antigonococcus serum of a woman of 30 with gonococcus septicemia and jaundice.

**Pituitary Tumor.**—The man, now 27, had been losing his sexual characteristics after air concussion from a large shell, and the sella turcica became enlarged. Under six months of weekly exposures to the roentgen rays, the signs of pituitary insufficiency have gradually subsided and the progress of the other disturbances has been arrested.

**Rupture of Amebic Abscess.**—The abscess in the liver ruptured into the pleura, but the extensive pyothorax was finally cured by repeated punctures plus emetin and neo-arsphenamin.

**Scurvy at Paris.**—The officer of 51 had lived for two months on bread and sausage alone, and developed typical scurvy. The tabulated metabolic findings testify to defective protein metabolism. The third day after change to a proper diet he excreted in the urine 112 gm. of urea and 69 gm. of total nitrogen.

**Slow Cancer of the Liver.**—The microscope at necropsy showed the usual features of an adenocarcinoma of the liver, but it had run a five year course.

**Membranous Colitis.**—The effects of constipation and abuse of enemas under pressure had induced severe membranous colitis in the woman. It yielded promptly to tincture of belladonna supplemented with an extract of bile.

**Syphilis of the Stomach.**—Only the history of syphilis in the antecedents and the recovery under specific treatment revealed that the typical "chronic gastritis" was of syphilitic nature in the man of 52. In a second case the symptoms had been those of dyspepsia, but the contrast meal disclosed what seemed to be three gummas in the stomach wall.

## Journal d'Urologie, Paris

1920, **9**, No. 4

*Idiopathic Dilatation of the Renal Pelvis. L. Bard.—p. 243.
*Correction of Hypospadias. J. Martin.—p. 249.
*Leukoplakia of Bladder. G. Marion.—p. 257.
*Orthopedic Resection of Renal Pelvis. G. Gayet.—p. 263.

**Intermittent Hydronephrosis.**—Bard declares that idiopathic dilatation of the kidney pelvis is the primary disturbance.

This in time entails kinks and distention by the obstacle afforded by the progressive development of the primary pocket. He describes an instructive case of intermittent hydronephrosis on the right side. Although roentgenoscopy revealed extreme dilatation of the kidney pelvis on both sides, there have been no symptoms from the left kidney to date. Attempts to dilate the ureter and rinse out the pelvis might be useful, but the only logical treatment is to transplant the ureter to the lowest part of the sagging renal pelvis.

**Treatment of Hypospadias.**—Martin applied a combination of Donnet's prepuce-flap method and Nové-Josserand's dermo-epidermis technic in a young man, and reports an excellent outcome.

**Leukoplakia of the Bladder.**—The extensive leukoplakia showed epitheliomatous degeneration at two points. There had been symptoms of rebellious cystitis for sixteen years, first noted at 15. The woman died at 31 from chronic suppuration in the kidney; she had refused nephrectomy until too late.

**Plastic Operations on the Kidney Pelvis.**—Gayet describes what he believes to be the fifth case on record of orthopedic resection of the pelvis for retention of urine in a wandering kidney. The sagging portion was resected, with nephrostomy and nephropexy, and clinically normal conditions were soon restored.

## Nourrisson, Paris

July, 1920, **8**, No. 4

*Choleriform Diarrhea in Infants. A. B. Marfan.—p. 193.
*Leishmaniasis in Children. M. Labbé and P. Ameuille.—p. 209.
*Digestive Intolerance in Infants. R. Pierret.—p. 217.
Stenosis of Pylorus in Infant. Morlet.—p. 220.
*Dog's Milk for Infants. A. Legrand.—p. 223.
*Infant Welfare Work. A. B. Marfan.—p. 226.

**Cholera Infantum.**—Marfan gives here the clinical description of the stages of choleriform diarrhea in infants, the forms it may assume, the course and complications, and the pathologic anatomy.

**Kala-Azar in Children.**—The two cases described developed in France and have been previously mentioned in these columns. The disease was probably contracted from the dog the family had brought with them from Serbia. The dog had been ailing, but none of the parasites were found in it when killed, which is usually the case. The disease lingered for fifteen months in one of the children, not modified by tartar emetic not begun till after improvement was evident; the course in the younger was progressive during the ten months it was under observation. When last seen, the spleen reached to the pubis. A third child rapidly improved when sent from Nice to the mountains two or three months after the anemia and large spleen had been first noticed.

**Treatment of Intolerance of Infant for Milk.**—Pierret reports three cases in which the intolerance for condensed milk or breast milk seemed to be the result of anaphylaxis, and was conquered by Weill's anti-anaphylaxis. The child was injected subcutaneously with 5 c.c. of a mixture of 2 teaspoons of unsweetened condensed milk and 4 tablespoons of boiled water. There was no general reaction, no fever, and two days later the child began to thrive on the condensed milk diluted 1:4. Before this it had responded with high fever and diarrhea to every attempt to feed it with condensed milk. The temperature chart shows the remarkable change brought about by the injection in the 11 month infant. The other infants were 6 weeks and 3 months old and a subcutaneous injection of 5 c.c. of the mother's milk arrested the digestive intolerance, fever up to 39 or 40 C. (104 F.) and diarrhea at every feeding.

**Dog's Milk in Infant Feeding.**—Legrand has witnessed four instances in which, after the puppies had been drowned, the dog suckled the infant in the family. In one case Legrand advised utilizing the large female dog he noticed under the gypsies' wagon, when he saw that the gypsy twins he had delivered not long before were being fed on insanitary soup. The animals in all the cases served with evident delight, running to the infant when they heard it cry. All the infants thrived on the dog milk. The fourth case was a boy of 10 who sucked his dog's milk after its puppies had been taken away. He said the milk was richer than cow's and goat's milk. In this case the lactation had been kept up for five or six months.

**Efforts for Infant Welfare.**—Marfan discusses here the advisability of homes for nursing mothers and infants, and asylums for infants that cannot be breast-fed.

## Paris Médical

Aug. 21, 1920, **10**, No. 34

*Primary Syphilitic Jaundice. G. Milian.—p. 141.
*Hemiplegia in Recent Syphilis. E. Gelma.—p. 144.
Plate to Screw on Fractured Bone. Dupuy de Frenelle.—p. 146.
Treatment of Lupus with Scarifications and Radium. B. de Laborie.—p. 149.

**Primary Syphilitic Jaundice.**—Milian reports three cases of jaundice contemporaneous with the primary sore. They confirm anew the peculiar affinity of the spirochetes for the liver. In one case the icterus had preceded the chancre by two or three days, and once the jaundice had subsided before the Wassermann reaction became positive. The jaundice never persisted after the subsidence of the primary sore. He adds that he has never found pruritus with syphilitic jaundice.

**Organic Hemiplegia with Recent Syphilis.**—The partial convulsions and hemiplegia with contracture in Gelma's two cases testified to a focal injury of the cortex from the recent syphilitic infection.

## Presse Médicale, Paris

Aug. 21, 1920, **28**, No. 59

Wounds of the Knee; Sixty-Four Cases. J. Okinczyc.—p. 573.
*Expectoration with Pleuropulmonary Suppuration. P. E. Weil.—p. 574.
*The Vagosympathetic Reflexes. A. C. Guillaume.—p. 574.
*Is Rachitis a Deficiency Disease? M. Nathan.—p. 577.

**Purulent Expectoration with Pleuropulmonary Suppuration.**—Weil refers to expectoration of from 150 to 250 c.c. of sputum per day from a partial, suppurating pleurisy which keeps up interminably until the process is arrested by operative intervention. The condition is liable to be mistaken for tuberculosis. With exploratory puncture followed by injection of methylene blue, the sputum shows blue at once, confirming the opening into the air passages.

**The Oculocardiac Reflex.**—Guillaume reiterates that the sensory and vegetative reflexes rank high in pathology; they cooperate in numerous pathologic conditions, from shock to asthma. The pituitary in particular seems to be a special target for all the stimuli which elicit responses in the vegetative nervous system. With the oculocardiac and similar reflexes we are able to study these responses, and penetrate deeper into this "No Man's Land" of certain psychoses, neuroses, etc.

**Is Rachitis a Deficiency Disease?**—Nathan summarizes some recent research which seems to answer this question in the affirmative. Empiric observation had already demonstrated the efficacy of cod liver oil in treatment, long before its high content in fat-soluble vitamin had been recognized. In any event, he says, it will do no harm for the physician to bear in mind the possibility of a deficiency factor as he seeks to ward off and to treat rickets.

Aug. 25, 1920, **28**, No. 60

Physical Training. J. P. Langlois.—p. 585.
*Insufficiency of the Pylorus. E. Enriquez and Gaston-Durand.—p. 586.
*The Calmette-Massol Technic in Serology. R. Letulle.—p. 588.

**Radioscopy of Pylorus Functioning.**—Enriquez and Durand expatiate on the advantage of roentgen-ray examination in cases of suspected gastric ulcer. They reproduce the radiographic findings to be expected in such conditions.

**Hemolytic Test for Tuberculosis.**—Letulle relates that the National Antituberculosis Society has recently officially advocated the Calmette-Massol technic for the deviation of complement test as an aid in the early diagnosis of tuberculosis. He describes it in detail and commends it further for the diagnosis of syphilis as well. The principle of the test is the adding of progressively increasing amounts of complement to a constant amount of serum and of antigen.

## Progrès Médical, Paris

July 24, 1920, **35**, No. 30

*Serotherapy in Tetanus. C. Achard.—p. 325.
Tests for Proteolytic Ferment in Tumor and Cancer Juice. Loeper and others.—p. 332.
Calcium Carbonate and Phosphate. G. Faroy.—p. 332.

**Cephalic Tetanus.**—Achard describes a case of cephalic tetanus in a woman of 50, seven days after a fall wounding the brow. This form of tetanus is characterized by contraction limited to the muscles of the face and neck, associated very often with facial, sometimes ocular paralysis. The onset is slow, but diagnosis is rendered easy by this peculiar association of contraction and paralysis, while the trismus and presence of a wound nearby naturally suggest tetanus. Treatment is the same as in ordinary cases, sedatives and especially chloral in large doses. The results from serotherapy, though encouraging, are not yet decisive. Its preventive properties are no longer doubted, but its curative action is not yet constant. The serum should be given repeatedly in large doses for eight days, even if during the first days there are no signs of improvement. In this case injection of 440 c.c. brought sufficient improvement for the antiserum to be dropped.

## Schweizerische medizinische Wochenschrift, Basel

Aug. 5, 1920, **50**, No. 32

*Leukanemia. Wanner.—p. 685.
Chemotherapy of Influenza. H. Ryser.—p. 695.
Spontaneous Valve Pneumothorax. Landolt.—p. 699.
*Thermometer for Deep Tissues, etc. B. Zondek.—p. 700.

**Leukanemia.**—In Wanner's case, in a young man, necropsy confirmed the diagnosis of associated acute lymphatic leukemia and pernicious anemia. Hemosiderosis was intense. The details of twelve similar cases are tabulated for comparison and also of eighteen others without hemosiderosis. He tabulates further six groups of anemias to a total of seventeen cases. The myelophthisis, he says, is evidently accompanied with hemolysis from the action of some still unknown toxin.

**Clinical Thermometer for the Depths.**—Zondek's "depth thermometer" set includes a metal tube with stout guide which is worked down into the tissues or the organ. The glass thermometer proper tapers to a long fine capillary tip which is pushed into the metal tube in place of the guide, to a depth of 3 cm. at least, and preferably the whole length of the tube, namely, 10 cm. The highest temperature in the body was always found in the rectum. The practical importance of this depth thermometer is for the detection of local inflammation in organs, etc. For example, he found in one woman the temperature in the thigh 31.7 C.; in the rectum, 38.3, and in a uterine myoma, 38.7 C. (101 F.). The assumption of a destructive process in the myoma was confirmed by the operation. The action of drugs and physical measures can be studied with greater accuracy by this depth thermometry.

## Pediatria, Naples

April, 1920, **28**, No. 7

Lethargic Encephalitis in Children. O. Cozzolino.—p. 305.
Influenza-Bacillus Vaccine in Lethargic Encephalitis. Maggiore.—p. 319.
*Serotherapy in Meningococcus Meningitis. P. Foti.—p. 321.

**Serotherapy in Meningococcus Meningitis.**—Foti gives the details of twenty-two cases in children with recovery of 61 per cent. In eighteen cases given systematic serotherapy, the mortality was 66 per cent. in the children under 2, and 15 per cent. in the older children, none dying of the six over 6 years old. The influence of the antiserum was prompt and decisive, even in two cases in which the serotherapy was not begun until the fortieth and forty-seventh days. Usually four or five intraspinal injections of 20 c.c. each were given. The mortality was in inverse ratio to the age, but it was not so high in infants as in the statistics from most other clinics. He ascribes this to his supplementary use of a vaccine by the vein in cases refractory to the antiserum. Hot baths and hexamethylenamin were given also in some cases.

## Policlinico, Rome

Aug. 9, 1920, **27**, No. 32

Abortive Treatment of Syphilis. L. Philippson.—p. 851.
Operate for Gastric Cancer! T. Cavazzani.—p. 855.
Scarlatiniform Eruption in Malaria. G. Genoese.—p. 858.

Aug. 16, 1920, **27**, No. 33

*Hyperhidrosis Below Spinal Cord Lesion. G. A. Pari.—p. 883.
The Maximal and Minimal Blood Pressure. G. Galli.—p. 888.
*Anatomic Bases for Anaphylaxis. A. Ilvento.—p. 889.
Phenol and Magnesium Sulphate in Tetanus. M. Gioseffi.—p. 891.

**Hyperhidrosis Below Spinal Cord Lesion.**—Pari theorizes on the basis of much clinical and experimental experience to explain the mechanism of this, and its exceptional frequency with syringomyelia.

**Anatomic Basis for Anaphylaxis.**—Ilvento presents evidence that the protein shock, from parenteral injection of peptone, for example, is a manifestation of anaphylaxis, and that this always corresponds to a grave functional and organic lesion of the nucleus of origin of the vagus nerve. Clinical and experimental experiences, he continues, have confirmed this injury of the nucleus of origin of the vagus in man and in animals. The resulting symptoms proceed from the paralysis of this nerve and the arrest of its inhibiting and regulating action on respiration and circulation, the combination entailing the clinical picture of anaphylaxis.

## Riforma Medica, Naples

July 17, 1920, **36**, No. 29

*Review of a Year's Research. E. Maragliano.—p. 641.
Palpation of the Abdomen. M. Ascoli.—p. 649.
Case of Pernicious Anemia. B. Maggesi.—p. 650.
Odors of Human Body. A. De Blasio.—p. 652.

**Vaccine Therapy of Tuberculosis.**—Maragliano reviews the experiences at the medical clinic at Genoa last year. Among others of special interest he reports that three tuberculous patients were given vaccine treatment and the conspicuous and progressive development of antibodies was systematically recorded. The results were as favorable, he says, as in former years in all cases adapted for active specific treatment. In one case of tuberculosis of both kidneys in particular, surprising results were realized. Teissier of Lyons has also published impressive results with the vaccine in similar cases. The vaccine is the same as that Maragliano uses in prophylaxis, which has been repeatedly described in The Journal. He adds that a number of his clinically cured tuberculous patients passed through influenza without any signs of life from their extinct tuberculosis at the time or since. For over twenty years he has been preaching that if the children exposed to tuberculosis were given systematic preventive vaccine treatment, with killed bacilli, the campaign against tuberculosis would enter an effectual and positive phase.

Some of the other achievements he mentions are summarized separately below.

**Index of Resistance of the Tuberculous.**—Pietroforte gages the resisting powers and indications for active specific treatment by the weight curve under progressive fatigue tests. This is especially instructive when supplemented with the metabolic findings.

**Prophylaxis of Bovine Tuberculosis.**—Maragliano reports Sivori's success in treating cattle with heat-killed bacilli and demonstrating the immune phenomena that develop thereafter. He declares that this is the first certainly useful and certainly harmless method of immunizing cattle against tuberculosis.

**Tuberculin Treatment of Asthma.**—Pietroforte has explained arrest of asthma under treatment with Maragliano's tuberculin as confirming that asthma is a manifestation of anaphylaxis. The organism sensitized by tuberculous toxins becomes desensitized by the small, repeated doses of tuberculin. The success in this line and with similar treatment of lymphogranulomatosis has convinced the workers at the medical clinic in charge of Maragliano that the share of tuberculosis in many conditions is much more extensive than has hitherto been recognized.

**Organotherapy in Experimental Tuberculosis.**—Manfredi found that experimental tuberculosis in guinea-pigs seemed to be whipped up when the animals were treated with thyroid extract. Suprarenal treatment, on the other hand, attenuated the disease process.

**Unreliability of Ambard's Formula.**—Maragliano states that the kidneys do not eliminate the nitrogen waste proportionally

to the quantity of such waste in the blood. Hence the Ambard formula is based on erroneous premises. The toxic symptoms with nephritis are not due to mere retention of nitrogenous waste but to toxic degeneration of this waste in the intermediate metabolism—extrarenal factors. The kidneys have merely a passive rôle in eliminating the waste. Barlocco's research on nineteen cases of anuria from mercuric chlorid poisoning and on nephrectomized rabbits, has demonstrated an unexpected complexity in the nitrogen metabolism.

## Rivista Critica di Clinica Medica, Florence

Aug. 5, 1920, **21**, No. 22

*Vaccine Therapy in Chronic Bronchitis. G. Stradiotti.—p. 253.

**Vaccine Treatment of Chronic Bronchitis.**—Stradiotti relates that he has had no failures in his numerous cases of chronic bronchitis treated with an autogenous vaccine. His first patient was a previously healthy woman of 30 who had been expectorating daily about 600 gm. of sputum after influenza about eight months before, rebellious to all treatment. The autogenous vaccine was injected at three day intervals, in the doses of 1, 2 and 3 c.c. There was no further coughing after this, and no expectoration by the third injection. He describes other cases, including one with a gangrenous process in the left lower lobe and adhesions preventing pneumothorax. Fifteen injections of the autogenous vaccine were required before the cure was complete. The only patient not completely cured was a boy of 11 with bronchial asthma.

Aug. 15, 1920, **21**, No. 23

*Temperature During Gastric Digestion. E. Riccioli.—p. 265.

**Temperature During Gastric Digestion.**—Riccioli's tests of twenty-six persons failed to confirm any rise in the rectal temperature during digestion in the stomach.

## Brazil-Medico, Rio de Janeiro

Feb. 28, 1920, **34**, No. 9

*Diagnosis of Thoracic Adenitis. Martagão Gesteira.—p. 133.

**Diagnosis of Tuberculous Glands in the Thorax in Children.**—Martagão gives an illustration showing old tuberculous glands in the mediastinum of an infant one day old. The symptoms from mediastinal glands inducing compression and from toxic action of the disease included dyspnea in two of his cases, but attacks suggesting asthma were more common. It is possible that certain cases of laryngospasm might be traced to irritation from unsuspected diseased glands. Coughing is the most constant and the most instructive symptom, a spasmodic, dry cough, often mistaken for whooping cough. He discusses further the physical signs and roentgen-ray findings, and commends the intradermal tuberculin technic as the most reliable test.

April 3, 1920, **34**, No. 14

Cytology of Cerebrospinal Fluid. Ernani Lopes.—p. 219.
Treatment of the Gassed. F. Lisboa.—p. 222.
Cerebrospinal Fluid in Syphilis. G. de Moura Costa.—p. 223. Cont'd.

June 19, 1920, **34**, No. 25

Zinc Chlorid in Treatment of Epitheliomas. F. I. da Silva.—p. 391.
Syphilitic Disease of Heart and Aorta of Thirty-Five Years' Standing to Date. O. Clark.—p. 392.
*Priority for Korsakoff's Syndrome. M. Mourão Mattos.—p. 393.

July 24, 1920, **34**, No. 30

The Menopause. J. Adeodato.—p. 475.
Visual Acuity and Military Service. J. Santa Cecilia.—p. 478.

**Priority of Description of Korsakoff's Syndrome.**—Mourão claims that Prof. Erico Coelho of the medical faculty of Rio de Janeiro published a description in 1886 of the syndrome which some years later Korsakoff described. Coelho called it merely *phenomenos cerebrosthenicos.*

## Gaceta Médica de Caracas

June 15, 1920, **27**, No. 11

Action of Tartar Emetic on Bilharzia. J. R. Risquez and Martín Vegas.—p. 131.

## Tohoku Journal of Experimental Medicine, Sendai

April 29, 1920, **1**, No. 1

*Starch-Digesting Ferments. S. Osato.—p. 1.
*Suprarenals in Experimental Diabetes. I. Fujii.—p. 38.
*Action of Epinephrin on Pupil. T. Kato and M. Watanabe.—p. 73.
*Autolysis of Normal Serum. I. S. Yamakawa and K. Okubo.—p. 83.
*Pharmacologic Study of Ginger. R. Doi.—p. 96.
*Sympathetic Innervation of Intestines. K. Tashiro.—p. 102.
*Vasoconstriction by Blood Serum. M. Watanabe and T. Odaira.—p. 106.

**Starch-Digesting Ferments.**—Osato's extensive experimental research on the amylolytic ferments in the animal body was devoted mainly to maltase. (The article is in German.)

**Suprarenals in Experimental Diabetes.**—Changes were found mainly in the chromaffin substance of the suprarenals during experimental diabetes of central origin. Among the other points brought out in the tabulated findings from the sugar puncture and drug tests on rabbits is that the splanchnic nerve on each side innervates the epinephrin secretion only on the same side. (In German.)

**Paradoxic Action of Epinephrin on Eye.**—Kato and Watanabe refer to the action of epinephrin on the pupil after repeated subcutaneous injections of the drug. Instead of the usual dilatation of the pupil, it contracts. This does not occur when the eyes are under the influence of atropin or when the epinephrin is injected for the first time. The contraction occurs probably from chemical changes in the muscles controlling the pupil. (In English.)

**Autolysis of Normal Serum.**—This first report of research on substances capable of promoting autolysis of normal serum concludes with the statement that the activating influence of acetone is largely dependent on the external temperature and the length of contact. Temperatures above 30 C. or below 20 C. inhibit its activating power. Small amounts of certain substances, such as ketone and aromatic alcohols promote this action although these substances alone may not display any activating influence. (In German.)

**Pharmacology of Ginger.**—Doi relates that Nomura has recently isolated the principle in ginger root responsible for the odor, and has named it zingerone. When infused into the blood of a frog it caused motor paralysis, but when used internally there were no symptoms suggesting toxic action unless very large amounts were used. (In English.)

**Sympathetic Innervation of Intestines.**—Tashiro describes experiments to demonstrate the action of epinephrin on the sympathetic innervation of the intestine. Its action seems to depend on the quantity, exciting or inhibiting according to the amount used. (In English.)

**Vasoconstricting Action of Blood Serum.**—Human blood serum seems to have a constricting action on the blood vessels of the frog, and this increases with the interval after the serum is drawn. (In German.)

## Deutsche medizinische Wochenschrift, Berlin

July 8, 1920, **46**, No. 28

Diabetic Coma in Pregnancy. F. Umber.—p. 761.
Relation of Acid-Fast Saprophytes to Tubercle Bacilli. Lange.—p. 763.
Treatment of Tuberculosis with Living, Avirulent Vaccines. F. Klopstock.—p. 764.
Roentgen-Ray Treatment of Surgical Tuberculosis. Elsner.—p. 765. Comment. O. Strauss.—p. 766.
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Function of the Superior Semicircular Canal. R. Schilling.—p. 767.
Production of Secondary Rays and Their Therapeutic Importance. M. Fränkel.—p. 771.
Carrot Extract in Infant Feeding. Aron and Samelson.—p. 772.
Hutchinson's Teeth. (A Reply). P. Kranz.—p. 773.
Operation for Umbilical Hernia in Children. H. Spitzy.—p. 774.
Flat-Foot. (A Reply). E. Fisher.—p. 774.
Urine Determination of Body Temperature. G. Poelchau.—p. 774.
Rhinolaryngologic Hints for General Practitioners. Finder.—p. 775.

July 15, 1920, **46**, No. 29

Contracted Heart. E. Meyer.—p. 789.
Further Discussion of Nonspecific Immunity. H. Much.—p. 791.
Kidney Function in Diabetes. H. Schirokauer.—p. 791.
Elective Demonstration of Spirochetes in Various Sections of the Central Nervous System. F. Jahnel.—p. 793.
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Bacteriologic Findings in Influenza. Loewenhardt.—p. 794
*Treatment of Tuberculosis. H. Bach.—p. 795.
*Treatment of Gangrene of Lung. J. Alsberg.—p. 797.
Treatment of Fracture of the Radius. Klapp.—p. 798.
So-Called Nutritive Anemia in Relation to the Anatomy of the Blood. Rollin.—p. 799.
Transmission of Scarlet Fever by Fomites After Fifteen Years. Golliner.—p. 799.
*Pathogenesis of Kidney Disease. H. Strauss.—p. 800.
Rhinolaryngologic Hints for General Practitioners. Finder.—p. 802.

**Value of Change of Climate and of Natural and Artificial Heliotherapy in Tuberculosis.**—Bach summarizes the benefits to be derived for tuberculosis patients from change of climate and heliotherapy, stating that, from time to time, change of climate and interruption of natural or artificial heliotherapy are to be recommended. Only the ultraviolet rays exert a special influence on the whole organism; therefore, only from such sources of light as have large quantities of ultraviolet rays can a therapeutic effect be expected, for which reason the natural sunlight of the lowlands cannot replace either the sunlight of mountain regions or its artificial reproduction. The character of the skin and skin function in different individuals is to be considered. Lasting results can only be expected so long as the natural, healing forces of the organism are still able to act.

**Treatment of Gangrene of the Lung with Neo-Arsphenamin.**—Alsberg reports four cases of gangrene of the lung, in two of which spontaneous recovery took place; in one recovery was brought about by neo-arsphenamin, and in a fourth case, spontaneous recovery did not occur, nor did it react to neo-arsphenamin, so that surgical intervention became necessary.

**Origin and Classification of Inflammations of the Kidney.**—Strauss states that in considering the quantity of excreted albumin as evidence of definite pathologic changes in the kidneys, only exceedingly high degrees of albuminuria have marked diagnostic value, and that even then the clinical peculiarities of the case must be taken into account. The diagnosis of a pathologic condition of the tubular epithelium becomes more certain if we find, in the urine, kidney cells and such casts as indicate a breakdown of kidney substance. The presence of large numbers of erythrocytes in the urine opposes ordinarily the idea of the localization of the disease process in the small vessels and in the glomeruli, although occasionally, it is true, extravasated blood in the interstitial tissue may break through into the tubules. The high blood pressure in certain cases in which the vessels of the kidneys are affected is a valuable symptom, but we must first make sure of its renal origin. If we distinguish carefully between cardiogenic and nephrogenic hydrops, the latter may be taken as evidence of a pathologic condition of the tubular epithelium, although nephrogenic hydrops may be due to many complex factors.

## Monatsschrift für Geb. und Gynäkologie, Berlin

July 5, 1920, **53.** Döderlein Festschrift. First Half

*High Vesico-Uterine Fistulas. P. Zweifel.—p. 3.
*Extraperitoneal Cesarean Section. O. Küstner.—p. 13.
*Dangers of Cicatrix from Cesarean Section. K. Baisch.—p. 57.
*Influence of Site on Cancer. L. Seitz.—p. 70.
*Pregnancy after Schauta Operation. F. Weber.—p. 77.
*Duration of Vitality of Spermatozoa. Nürnberger.—p. 87.
Roentgen-Ray Treatment and Eugenics. Nürnberger.—p. 101.
Embryotomy of Living Child. W. v. Redwitz.—p. 105.
Results of Roentgen-Ray Treatment of Cancer of Cervix. E. v. Seuffert.—p. 115.
Posterior Colpotomy in Diagnosis and Treatment. H. Schnitzer.—p. 130.
Phenolethylbarbituric Acid (Luminal) in Eclampsia. Miltner.—p. 137.
Roentgen-Ray Treatment of Uterine Myomas, etc. E. Zweifel.—p. 155.

**High Vesico-Uterine Fistulas.**—Zweifel has applied in eight cases with smooth and afebrile recovery an abdominal technic which aims to detach the bladder from the uterus and the vagina. By this means the region of the fistula is rendered entirely movable. He cuts with scissors the bladder away from the vagina, and sutures the mucosa with catgut, the muscular layers in tiers with silk, and the serosa with fine silk, and he does not drain. Removal of the uterus is not needed or desirable. This method is applicable only to obstetric fistulas, not to those that develop from gangrene after hysterectomy.

**Extraperitoneal Cesarean Section.**—Küstner states that since he introduced extraperitoneal cesarean section in 1908 for delivery with contracted pelvis, he has applied this technic in 183 cases with only two deaths, including a fatality from a preceding unsuspected rupture of the uterus. There is much less danger of adhesions forming with this technic than with the transperitoneal, and there was never any peritoneal reaction in his cases except in the two fatal cases mentioned.

**Dangers of Cicatrix from Cesarean Section.**—Baisch has a record of 170 cesarean sections with only one death from infection; in this case the lochia had been previously fetid. In 28 cases the cesarean section had to be repeated at a later childbirth, and in 3 of these the cicatrix ruptured. To avoid this, he now makes a practice of delivering women with much contracted pelvis at term, without waiting for labor pains. The loss of blood was slight in the 10 cases in which this was done. He gave a dose of pituitary extract by the vein as he started to make the incision. This induced such vigorous contractions that the placenta was expelled almost at once. The lochia escape from the undilated cervix without hindrance.

**Factors in Malignancy of Cancer.**—Seitz argues that the resistance by the tissues in which the cancer is developing—the mechanical-static conditions in the tissues—have a great influence on the way in which it develops. Conditions are particularly favorable for the spreading of a cancer in the ovary, and hence these cancers are generally regarded as exceptionally malignant. But when radical excision is possible, there is no greater tendency to recurrence with these than with other cancers.

**Outcome of Schauta Operation for Genital Prolapse.**—Weber reports two cases of pregnancy after the Schauta operation plus ligation of or wedge resection of both tubes. Conception must have occurred before the operation. To prevent such mishaps, he now advises to curet the uterus before fastening it in the abnormal position by the Schauta technic. The two women were safely delivered by cesarean section, but they had suffered severely from traction pains during the last half of the pregnancy. The prolapse recurred in 2.4 per cent. of forty-three Schauta operations, but all the other patients have had their earning capacity completely restored except two who died from intercurrent or preexisting disease soon after the operation.

**Duration of Vitality of Spermatozoa.**—Nürnberger found living spermatozoa in the normal tube at a laparotomy the fourteenth day after the last sexual intercourse in one case, and the fifteenth day in another.

## Monatsschrift für Kinderheilkunde, Berlin

July, 1920, **18,** No. 4

*Intra-Abdominal Pressure in Infants. A. Peiper.—p. 289.
*The Vegetative Nervous System in Pertussis. Martha Bardach and O. Lade.—p. 293.
*Parathyroid Implants in Tetany of Infants. Rosa Lange.—p. 328.
*Scarlatinoid Rash with Varicella. W. Arkenau.—p. 332.
Delirium with Pneumonia in Children. S. Freudenthal.—p. 334.
*Outbreak of Dysentery in Infants. Jacki.—p. 340.

**Intra-Abdominal Pressure in Infants.**—Peiper states on the basis of investigations on a long series of infants that the average intrarectal pressure in the dorsal position is from 20 to 30 cm. of water. Respiration caused regular oscillations of from 2 to 4 cm. The lowest intrarectal pressure, from 8 to 10 cm., was found in children with flaccid abdominal walls.

**The Vegetative Nervous System in Pertussis.**—As the result of research on twenty children with whooping cough, Bardach and Lade state that the vegetative nervous system is not necessarily hyperirritable before pertussis can develop. However, when the sympathetic system has low excitability and the autonomic system is easily depressed, the course of the disease is usually long and the type severe. As compared with adults, relatively high doses of pilocarpin, atropin and epinephrin were required for children to secure the same effect. The reaction to atropin, pilocarpin and epinephrin did not differ materially at the height of pertussis and in convalescence from the response in health. There was no evidence in the children of sympatheticotonia or parasympatheticotonia, and the stimulating action of epinephrin on the sympathetic system was unusually slight. The autonomic system reacted more readily to pilocarpin. The paralyzing effect of atropin on the autonomic system was greater than the stimulating effect of pilocarpin. Atropin aggravated the paroxysms. The minute details of the extensive research are tabulated in full.

**Transplantation of Parathyroids in Tetany of Infants.**—Lange reports the results of such transplantation in four infants 11 to 18 months old. Only in one case was there any therapeutic benefit and even that was questionable.

**Scarlatinoid Rash with Varicella.**—Arkenau reports an outbreak of varicella in which 19 per cent. of the thirty-two cases presented a scarlatinoid rash. There had been no case of scarlet fever in the hospital for several months previously. In one case the rash disappeared within twenty-four hours; in three cases it lasted three days, and in two cases even eight days.

**Dysentery at Heidelberg.**—Jacki reports an outbreak of dysentery occurring in September, 1919, in Heidelberg and vicinity. In the Children's Hospital 12 infants were taken ill the same day, presenting more or less fever and watery mucous stools, which, during the next few days, assumed a typical dysenteriform character. The infants, occupying three different wards, had all been fed a flour and butter gruel. Bacteriologic examination of the stools revealed the Shiga-Kruse bacilli. Examination of the kitchen personnel discovered an agglutination reaction of the blood serum, 1:200, of two wetnurses with the Shiga-Kruse bacillus, but no bacilli could be found in their stools. Of the 15 hospital cases and 15 in the homes, 21 were in children under 1 year, and the 18 more serious cases all ended fatally in from four to twenty-three days. As for treatment, the best results were secured with animal charcoal (from 10 to 15 gm.) either alone or in combination with castor oil, from 2 to 4 teaspoonfuls to a dose. In recent cases, defervescence often promptly followed their administration.

## Münchener medizinische Wochenschrift, Munich

July 23, 1920, **67**, No. 30

*Device for Collecting Roentgen Rays. H. Chaoul.—p. 861.
*Dermoids of the Anterior Mediastinum. O. Kleinschmidt.—p. 862.
*Operation for Cleft Palate. R. Drachter.—p. 865.
Arthrodesis. R. Pürckhauer.—p. 868.
*Foot-and-Mouth Disease in Man. E. Veiel.—p. 869. Treatment with Silver Arsphenamin. G. Kröncke.—p. 870.
Surgical Tuberculosis and the Friedmann Method. Krumm.—p. 870.
*The Fatal Single Dose of Epinephrin. A. W. Fischer.—p. 872.
Sliding Hernia with Perforation. J. Meyer.—p. 873.
Dermatitis Caused by Imitation Leather. Baer.—p. 874.
Medical Examination of Candidates for Matrimony. Schubart.—p. 874.
Deformity of Spine as Sequel of Tetanus. Becher.—p. 874.

**Device for Collecting and Reflecting Scattering Roentgen Rays.**—Chaoul, chief of the roentgenographic department of the University Clinic, Munich, describes with illustrations an apparatus of his own invention by which he collects and reflects back on to the field of irradiation the diverging rays whose energy would otherwise be lost. He claims for his "strahlensammler," or ray collector, that the irradiation time is materially shortened, which is much appreciated not only by the patients themselves but also by the attending personnel, and that a considerably economy of energy and in depreciation of apparatus is thereby accomplished.

**Radical Operation for Dermoids in the Anterior Mediastinum.**—Kleinschmidt reports two cases. The first was complicated by the perforation of the right pleural cavity by the dermoid, and after the first partial and then total removal of the growth, several secondary operations became necessary on account of fistulas, for infection of the fistulous cavities could not be avoided. In the second case the cavity had been closed completely at once, followed by primary healing. Eiselsberg's statement that the loosening of dermoids from their adhesions with surrounding organs is a comparatively easy matter was verified. Radical operation with primary suturing of the wound made it possible to dismiss the patient, cured, at the end of seventeen days.

**Best Time for Operation on Congenital Cleft Palate.**—Drachter advocates operating on the hare-lip first. He explains that congenital cleft palate, provided the operation for hare-lip has been done, passes regularly through three different stages. In the second stage the fissure is narrowest. During this stage the cleft should be closed, narrowing the fissure, bringing the roof of the mouth into a horizontal plane by lowering the vault, and bridging over the fissure. Normal speech depends on the extent to which the function of the velum can be restored; that is, whether the velum is long and mobile enough, and adequately trained. These demands are fulfilled by the operation during the second stage, supplemented by special instruction in enunciation and in voice culture in general. In the third stage, the soft palate, on account of the great width of the fissure, becomes too short and speech always remains defective. He defines the second stage as the interval before the cleft in the alveolar process closes; this may take up to a year after the operation on the hare-lip. The closure occurs more rapidly if the operation on the lip was done when the child was only a few weeks or months old. During this second phase, as the fissure is then narrowest, there is less lateral traction on the halves of the velum, and exercises in speech can be begun before bad habits of speech have become inveterate.

**Treatment of Foot-and-Mouth Disease in Man with Silver Arsphenamin.**—Kröncke at first employed silver arsphenamin only in cases in which other remedies failed or in which, after apparent recovery, a relapse occurred, but in recent cases he has given right at the start an injection of 0.1 gm. of silver arsphenamin, with local application of chromic acid or calcium chlorid, since which he has never found the disease refractory. More than two injections were never necessary. The only complication he has seen was once a rise in temperature to 39.7 C. on the evening following the injection. The disease was contracted from milk in the case described in detail.

**What is the Fatal Dose of Epinephrin?**—Fischer was called on to give a medicolegal opinion in a case in which, by mistake of a nurse, in place of the usual 1 per cent. procain-epinephrin solution, 10 c.c. of 1:1,000 solution of epinephrin were injected into the skin and muscle of the leg of a man of 35 in connection with an operation for bone fistula from a gunshot wound. The aim was to block the peroneal nerve at the head of the fibula and the tibial nerve above the ankle. Anguish followed the injection, with severe pain in the neck and back of the head, and palpitation of the heart. The pupils dilated and contracted, and in about six minutes death ensued, with manifestations of heart failure. During this six-minute interval the pulse was not perceptible to the finger. Necropsy several days later revealed status thymolymphaticus but no valvular lesions. There was no evidence that the epinephrin had been injected directly into the blood stream. Fischer was personally convinced that it was a case of epinephrin poisoning, but in view of the pathologic condition of the thymus he felt compelled in his decision to take a noncommittal attitude. The dilatation of the pupils, together with the pain in the head and the imperceptible pulse pointed to epinephrin poisoning, a general spasm of the vessels with consequent anemia of the brain. He therefore recommends caution as to the size of the single dose, but adds that, owing to the transient effect of epinephrin, the total daily dose need not be so carefully controlled.

## Zentralblatt für Chirurgie, Leipzig

June 26, 1920, **47**, No. 26

*Incision for Gallbladder Operations. H. Braun.—p. 634.
*Fixation of Movable Kidney. E. Rehn.—p. 637.
Improved Transverse Cheek Incision. E. Pólya.—p. 640.
Advantages of Double Rectangular Flap Incision of Periosteum in Rib Resection. H. F. O. Haberland.—p. 641.
Amputation of the Thigh. J. Becker.—p. 643.
*Pressure Pain in Mesentery with Appendicitis. P. Rosenstein.—p. 644.

**Right-Angle Incision in Gallbladder Operations.**—Braun gives his experience with the Czerny-Kocher right-angle abdominal incision for the exposure of the bile ducts, which he thinks, gives the most convenient access to the bile ducts, without making it necessary to use retractors to hold the abdominal wound open; nor is the operator hampered to the same extent by protrusion of intestine. The operation is complicated somewhat by the great care required in so planning and starting the suture of the abdominal wall that it will withstand the strain of coughing and vomiting. The critical region is at the apex of the angle, on the median line, for if the suture tears out here, the whole suture usually gives way, resulting in a monstrous hernia. To avoid this, Braun passes a wire attached to a lead plate through all the layers of the abdominal wall. Then at the apex of the angle and on each side close to it, strong catgut sutures are placed close together which include only the aponeurosis and the peritoneum. An assistant crosses the ends of the middle one of the three catgut sutures, and pulls the ends apart, until the edges of the apo-

neurosis are coaptated. At the same time the operator ties the two other catgut sutures, and after this the middle suture. The transverse and vertical incisions are sutured in tiers as usual. The transverse incision shows no further tension after the apex is closed. If needed, a supplementary tension suture with lead plate makes the suture line perfectly secure. A drain may be inserted at the outer end of the transverse incision but never at the apex as recommended by Kehr. Braun thinks the wire lead-plate suture is by far the best means of taking the tension off of lines of suture until they can have time to heal. The article is illustrated.

**Fixation of Floating Kidney Following Nephrotomy, etc.**—Rehn grasps the lower pole of the kidney and presses it against the costal arch, while the other hand passes a curved needle with heavy silk thread through at the lower border of the twelfth rib near the outer edge of the sacrospinalis. The needle pierces the center of the lower pole of the kidney and passes on through the insertion of the diaphragm, emerging in the intercostal space close to the upper margin of the twelfth rib, as is shown in an illustration. The suture is tied over a roll of gauze and is removed in about fourteen days. The procedure has given good results in seven cases, in five of which fixation was done through the lumbar incision, once through the intraperitoneal incision along the costal arch, and once through a pararectal incision. Twice the complete success of the procedure was verified by later operations for other causes. As the procedure can be carried out very quickly and necessitates only a small incision, Rehn thinks that it deserves consideration for ordinary floating kidney, but he recommends it especially in the case of a movable kidney, inclined to sag or twist on its axis, following surgical intervention, especially nephrotomy.

**Differentiating Pain with Appendicitis.**—Rosenstein places the patient on his left side, both anterior superior spines of the ilium perpendicular to the plane of the bed. Then he applies pressure to the right side, three fingerbreadths inside of and a little below the right spine. This induces sharp pain if the appendix is inflamed and swollen, as it drops down and pulls on the mesentery which is usually supersensitive in such cases.

## Zentralblatt für Gynäkologie, Leipzig

July 17, 1920, **44**, No. 29

Twilight Sleep in Obstetrics. H. Gänssbauer.—p. 789.
Ovarian Therapy in Obstetrics. J. Hofbauer.—p. 792.
Desquamation in the Newborn (a Reply). H. Lorenzen.—p. 797.

## Zentralblatt für innere Medizin, Leipzig

July 17, 1920, **41**, No. 29

*Capillary Blood Pressure. E. Kylin.—p. 505. Idem. F. Volhard.—p. 512.

**Capillary Blood Pressure in Relation to Abnormally High Arterial Pressure.**—For measurement of the capillary blood pressure, Kylin has devised a simple apparatus to compress the capillaries in the finger under the microscope. A small glass chamber with manometer connection and bulb has a metal disk for the bottom in which there is a circular opening, 10 mm. in diameter, over which a transparent membrane is loosely stretched. With this device he measured the capillary blood pressure in about 100 healthy subjects, finding the normal range to be between 110 and 190 mm. of water. In glomerular nephritis, on the other hand, he found the capillary blood pressure abnormally high in all the 100 acute cases or exacerbations of chronic cases investigated, but never with benign nephrosclerosis. There seem, therefore, to be two types of abnormally high arterial blood pressure, one with and one without increased capillary blood pressure. In daily testing of over 20 scarlet fever patients, beginning with the second week of the disease, he found that some showed no increase of capillary pressure, while others presented a marked increase, which gradually subsided without albumin appearing in the urine. In three patients, however, a typical glomerulonephritis developed, with albumin, casts and red blood corpuscles in the urine. In these cases it was significant that this nephritis had been preceded for several days by an ever increasing capillary pressure. The glomerulonephritis set in when the capillary pressure reached about 300 mm. of water. In one case no signs of albuminuria appeared until a week after the first rise in the capillary pressure.

This assumption of two types of arterial hypertension was confirmed by injection of epinephrin. This raised both the general arterial and the capillary blood pressure, while application of cold to the arm raised the local arterial blood pressure but not the capillary. On the other hand, in 20 cases of benign nephrosclerosis, with markedly increased arterial blood pressure, in most cases over 200 mm. of mercury, the capillary blood pressure was always found within normal range, never exceeding 190 mm. of water. The increase was considerable, values of over 500 mm. of water not being uncommon; the highest was 750 mm. of water, equal to 55 mm. of mercury. During recovery the capillary pressure falls, along with the arterial pressure, but the capillary pressure remains high longer. In many cases, during the stay in the hospital, at least, the pressure did not fall to normal, and in such cases defective functioning was usually manifest. Even in 10 cases of acute glomerulonephritis, with normal blood pressure, an increase of capillary pressure was demonstrated.

## Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

July 10, 1920, **2**, No. 2

*The Lipochrome Pigment in Serum and Organs. A. A. H. van den Bergh, P. Müller and J. Broekmeyer.—p. 127.
*Indican in Serum. I. Snapper and van Vloten.—p. 136.
*Influence of Rhythm on the Pulse Rate. J. H. O. Reys.—p. 141.

**The Lipochrome of Blood and Organs.**—Van den Bergh and his co-workers tabulate the findings in regard to the lipochrome pigment content of the serum and various organs from forty-three cadavers. No connection was apparent with the kind of disease, and no parallelism between the serum content and that of various organs. The content seems to be smaller before the age of 15 and after 50. The suprarenals in the young contained almost as much lipochrome as in the elderly. The data cited seem to indicate that the lipochrome has considerable physiologic significance. The palms and soles were intensely yellow in some cases of typhoid and in a child with septic endocarditis and two young women with anemia. One of the latter had eaten very little during the weeks before death, but the lipochrome figures were high: 4.5 for fat; 7.5 for the spleen; 20.5 for the liver, and 73 for the suprarenals. In one woman convalescing from typhoid, the serum contained 0.9, the highest figure encountered except in diabetics.

**Indican in Serum as Test of Kidney Functioning.**—This communication from Snapper's clinic emphasizes the importance of the normal indican level in the blood serum, as an excess points to deficient functioning of the kidneys. Any excess is readily determined by treating 3 or 4 c.c. of serum with equal parts of a 20 per cent. solution of trichloracetic acid to get rid of the albumin; 2.5 c.c. of the filtrate is diluted to 10 c.c. with distilled water. Then 1 c.c. of thymol spirit and 10 c.c. of the Obermayer reagent are added. After an interval of twenty minutes the tube is shaken with 2 c.c. of chloroform, and in half an hour the chloroform turns pink if the indicanemia is above the normal range. The intensity of the pink tint mirrors the indican content of the serum. In normal conditions, 2.5 c.c. of the filtrate corresponds always to the indican of 1.25 c.c. of blood serum. If more exact determination of the indican is desired, the Rosenberg test is commended. The Obermayer reagent used is a 4 per thousand solution of ferric chlorid in concentrated hydrochloric acid. Several possible sources of error with this and other tests for indican in blood and urine are described.

**Influence of Musical Rhythm on Pulse Beat.**—Reys' patient is a young woman whose pulse grew temporarily fast or slow to correspond to the rhythm of music. Even the beat of a metronome sufficed to modify the pulse beat to correspond. He reproduces the tracings of the pulse while the third or fifteenth Chopin preludes were being played in the room. With a metronome ticking 192 times to the minute, the pulse beat was 96 to the minute: 1:2. With a metronome beat of 80, the pulse was 80. With a metronome beat of 40, the pulse kept at 80. The subject was a young woman who at one time had been treated for "piano arm," but did not seem to be nervous.